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ABSTRACT

This marketing unit focuses on the seasonal and cyclical patterns of livestock markets. Cash marketing, forward contracting, hedging in the futures markets, and the options markets are examined. Examples illustrate how each marketing tool may be useful in gaining a profit on livestock and cutting risk exposure. The unit is organized in the following eight sections: introduction to livestock marketing; seasonal and cyclical patterns; marketing tools (cash sales, forward contracts, futures and hedging, and options on futures contract); roles in marketing; summary; suggested references on livestock marketing; an appendix (contract specifications for hogs and cattle); and two exercises. A teacher's guide includes objectives, a teaching outline, suggested on- and off-farm learning activities, interest approaches, discussion guides, and answers to exercises. Thirty-seven transparency masters are included. (KC)

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LIVESTOCK MARKETING

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March 1990

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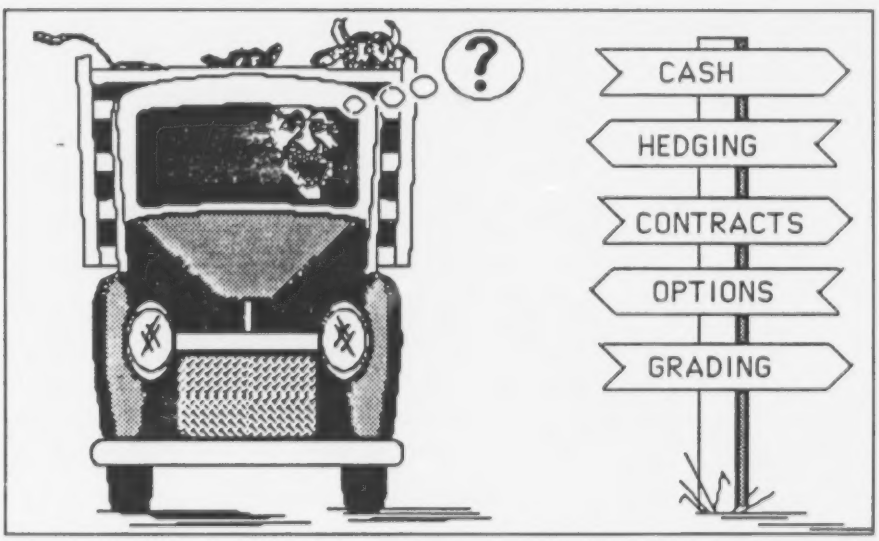
LIVESTOCK MARKETING

OBJECTIVES:

At the completion of this section, each farm family will:

1. be able to use livestock seasonal and cyclical patterns to increase their ability to forecast prices of livestock, understand price trends and improve their marketing decisions,
2. better understand the uses of cash sales, forward contracting, hedging and options,
3. compare livestock marketing tools for pricing and risk management, and
4. be able to select and use appropiate marketing tools for their own livestock marketing situations.



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Livestock Marketing

I. Introduction to Livestock Marketing

II. Seasonal and Cyclical Patterns
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- Cattle Cycles
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IV. Marketing is Not a One Person Job!

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LIVESTOCK MARKETING

I. INTRODUCTION TO LIVESTOCK MARKETING

If your family produces livestock, you will benefit from wise marketing both by optimizing income and minimizing risks. What are the livestock marketing alternatives available? How would each alternative provide the family and farm with greater profit? Which alternatives would provide risk protection or give the family a greater feeling of control and lessen the feeling of income uncertainty?

In this unit the seasonal and cyclical natures of livestock markets are discussed. Cash marketing, forward contracting, hedging in the futures markets, and the options markets are examined. Examples illustrate how each marketing tool may be useful as you seek to gain a profit on the livestock you produce and to cut your risk exposure. As you understand the advantages and disadvantages of each marketing tool, used separately or in combinations, you will gain confidence in expanding you own marketing strategies. Grain marketing and developing your own marketing plan will be the topics of subsequent units.

II. SEASONAL AND CYCLICAL PATTERNS

Inventory and production cycles have been a part of the hog and cattle industries for many years. Cycles are recurring changes in inventory or production which are one year or more in length. A complete cycle includes successive years of increase and decrease in either inventory or production, or extending from one peak or valley to the next peak or valley. **Cycles** are different from **seasonal** price or production patterns. Seasonal patterns are those recurring production or price changes which take place within a year.

HOG CYCLES

Hog production cycles exist primarily because of the time lag in producers' responses to changing economic conditions in the hog industry and the time necessary to either increase or decrease actual production of pork. It takes 9 to 10 months after breeding before additional hogs can be put on the market, once the breeding stock for farrowing expansion are available. Additional time is usually required for a producer to obtain more breeding stock, after a decision to increase farrowings has been made. Also, producers usually do not react immediately to favorable hog returns by expanding their hog operation or entering the hog business. Three months or more of favorable profits are normally required before general expansion of the breeding herd takes place.

Decreases in hog production can take place more rapidly than increases and the cyclical downtrend in production is usually shorter than the expansion phase. As in the case of hog expansion, hog producers are usually reluctant to quickly reduce their breeding herds. It may take several months of unfavorable returns before producers respond by reducing sow farrowings, and an additional five or six months before pork production turns down.

Figures 11-1 and 11-2 illustrate the length of past expansion and reduction phases of the U.S. hog production cycle, based on annual liveweight production. There have been

either eight or nine complete production cycles since 1950 depending upon whether the 1975-82 period is considered one long cycle or two shorter cycles. The average length of the cycle has been 4.5 years, including both the expansion and cutback phases. Hog production cycles have been of different lengths, varying from three to as many as seven years for a full cycle. The most frequent cycle has been the four-year cycle, which has occurred three times since 1950.

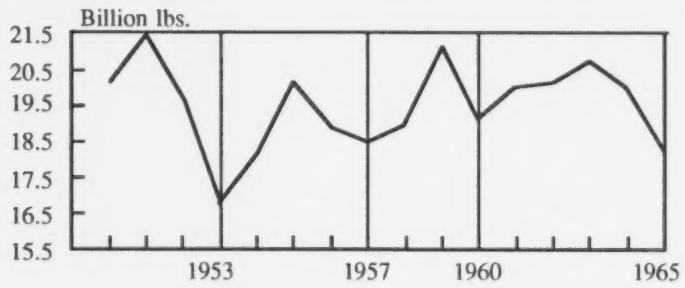


Figure 11-1. Hog production cycles, 1950-1965

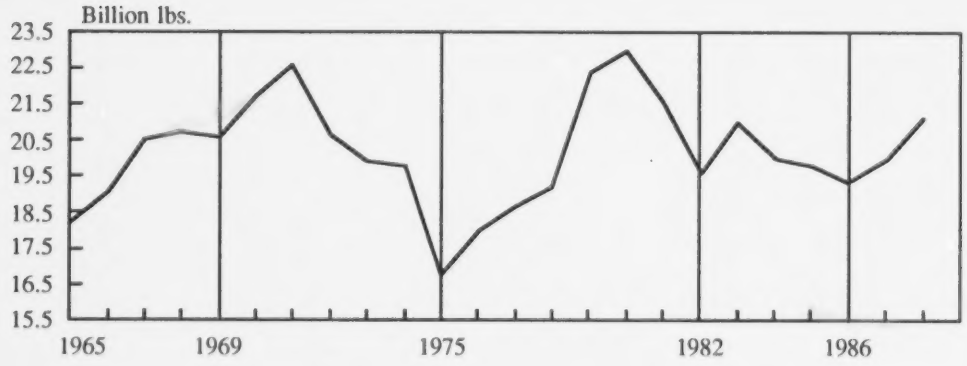


Figure 11-2. Hog production cycles, 1965-1988

An important characteristic of the eight hog production cycles since 1950 is that only two cutback phases lasted more than two years. Four of the cycles had two years of declining numbers, and two had only one year of downtrend.

Hog price cycles are defined in the same manner as the production cycles, but illustrate uptrends and downtrends in price. The cycle consists of rising hog prices followed by a period of price decline. Price cycles are almost the exact opposite of the production cycles. When hog production rises, hog prices normally fall and when hog production declines, hog prices usually rise.

The hog price cycles since 1950 have been shorter than the production cycles. The completed production cycles from 1950 through 1986 averaged 4.5 years while the price cycles averaged only three years in length (Figures 11-3 and 11-4).

There have been six cycles when the uptrend phase of the price cycle lasted two years.

The uptrend in the other price cycles lasted only one year. The downtrend phase of the hog price cycle has varied in length from one to three years. The downtrend lasted only one year in eight of the price cycles. Three cycles had two years of declining prices, and one cycle declined for three years. The most typical price cycle would be one with prices rising for two years and declining only one year.

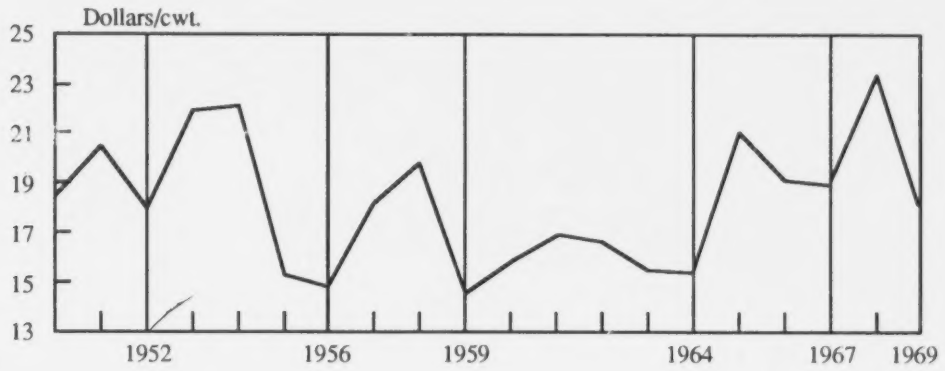


Figure 11-3. Hog price cycles, 1950-1969

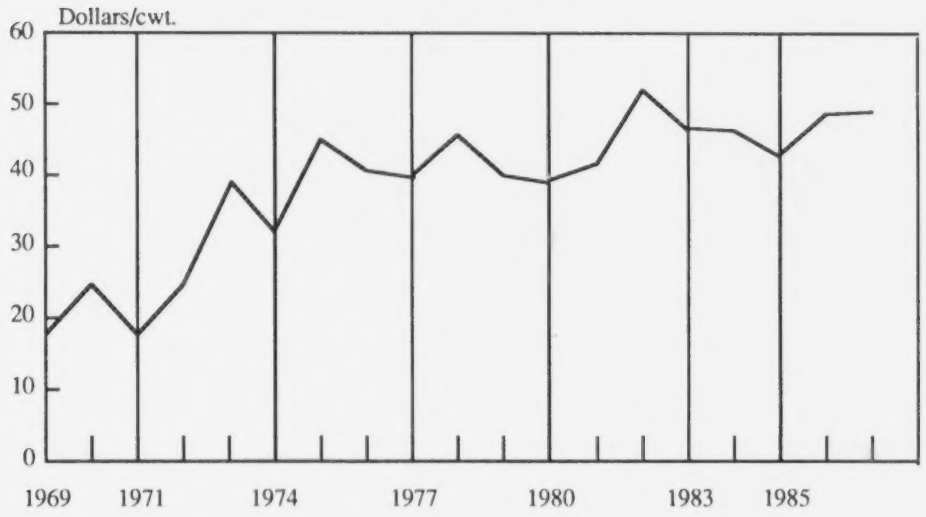


Figure 11-4. Hog price cycles, 1969-1987

CATTLE CYCLES

As with hogs, **cattle inventory and production cycles** exist because of the time lag in response of producers to changing economic conditions in the cattle industry and the time lags that occur before inventories and production actually increase or decrease. Cattle cycles are usually much longer than hog cycles, because of the longer biological time required for breeding herd expansion and for actual production increases to take place. In

addition, there is a sizable capital investment in breeding stock in cow-calf operations, so decisions to expand or reduce cow numbers are not made quickly.

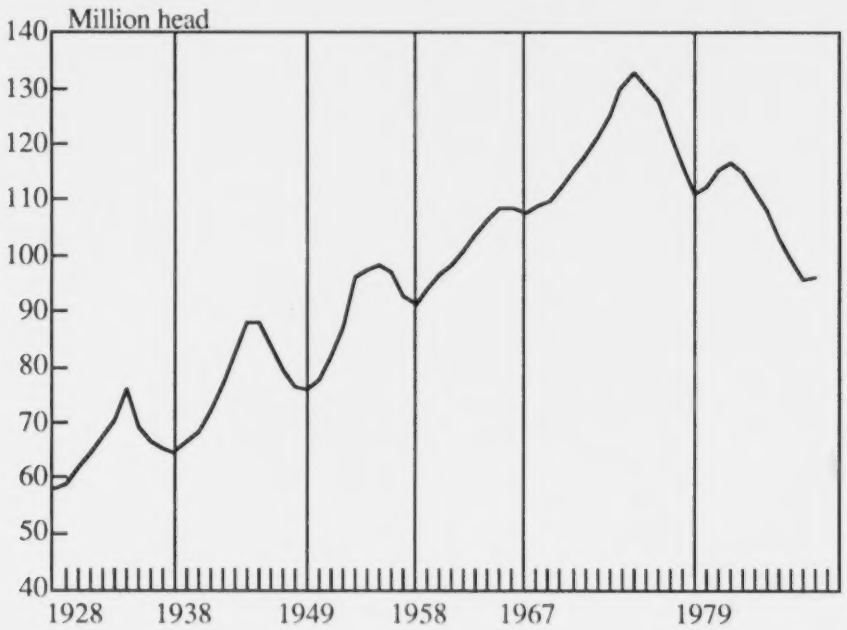


Figure 11-5. Cattle production cycles, 1928-1988

The long term nature of cattle inventory cycles in the U.S. is shown in Figure 11-5. In the past, cycles have typically been from 9 to 14 years in length, from valley to valley. Recent cycles have been somewhat less regular than earlier ones. The length of past cycles is illustrated by the vertical lines in Figure 11-5.

The 1958-67 cycle is the only recent cycle that did not have a significant liquidation phase. The cycle from 1967 to 1979, however, included the sharpest liquidation phase of any cycle. The expansion phase of the cycle starting in 1979 was very short, with a buildup that continued for only three years.

The increase in cattle slaughter and beef production usually lags behind the expansion in cattle inventories by two or three years. In the buildup phase of the cycle, additional heifers are retained for the breeding herd and culling of older cows is slowed. This initially reduces slaughter and keeps beef production from increasing. Eventually, however, the number of calves born increases enough to provide more cattle for feeding and slaughter as well as for continued herd expansion.

Beef price cycles are influenced by the production cycle. As beef production increases, price levels are eventually pushed lower until the lower profitability causes individual operators to decide to reduce their breeding herds again. As more cows and heifers go to slaughter, total slaughter and beef production increase initially. This process continues until smaller calf crops lead to smaller slaughter and improvement in prices and profitability.

While price and profit levels are the most common influence on cyclical changes in cattle inventories, the availability and cost of feed can also influence breeding herd decisions. Extended and widespread drought, for example, may force liquidation of breeding stock even if market conditions are favorable.

Cyclical price and inventory changes can be used to help determine when to market or price livestock. In the declining phases of the cattle or hog price cycles, for example, you should consider marketing animals at lighter than normal weights, since any delay in marketing may result in a lower price. In the uptrend phase of the cycle, livestock should be marketed at heavier weights or marketing should be delayed longer than normal. Not only will they tend to bring higher prices, but when prices are rising as a result of lighter slaughter, discounts for light weights usually decrease or start at heavier weights.

SEASONAL PRICE PATTERNS

Price cycles should not be used without considering the seasonal price pattern. Livestock prices have historically shown some variation from certain months to others, with a tendency for the changes to follow some degree of seasonal regularity from year to year. Prices historically tend to be high in some months and low in others. To the extent that the changes during the year are repetitive or fairly consistent, they can be useful in making production, marketing, or pricing decisions.

Obviously, when both the seasonal and cyclical patterns indicate declining prices, marketing at a lighter weight is important. When both the cyclical and seasonal price patterns indicate rising prices, marketing at heavier weights can increase net returns.

Seasonal price changes for hogs can result from changes in the supply of hogs and pork, changes in the demand from consumers for pork products, or some combination of these factors. Seasonal variations in pork supply are typically less pronounced now than in earlier years. More of the production is coming from operations where farrowings are evenly distributed throughout the year. But there is still enough month to month variation in farrowings to bring significant seasonal changes in levels of pork production. More hogs are normally farrowed during mild weather than in summer or winter, and are marketed in the fall and early spring. Seasonal price patterns may change over time, with changes in production technology or industry structure.

Cattle prices also show some seasonal variation. However, the seasonal price changes for most classes of cattle are less pronounced than for hogs, and the patterns are less consistent. Even so, seasonal changes in market supplies of particular kinds of cattle and in total beef supplies can cause price patterns that are repetitive. Seasonal changes in demand for particular kinds or quality of beef can also influence these price changes.

Seasonal price indexes are published which may help predict price trends. Two kinds of information are reflected in seasonal price indexes. First is an average price index for each month. This shows the average relationship of prices in a particular month to the average for all months in the years included in the index calculation. The index reflects only the seasonal variation in price, since the calculation procedure eliminates most of the price variation caused by other factors.

The second measurement is a variability index that expresses the reliability of the price index for a particular month. It is based on the variability of prices for a specified month

during the years included in the index calculation. Specifically, the points on the charts that are above and below a particular monthly index indicate the range in which prices that month could be expected to fall most of the time. For example, if a monthly seasonal index value is 103 and the variability factor is 4.0, the price in a particular year may be as high as 107 percent or as low as 99 percent of the annual average. The smaller the variability factor and the closer the points are to the index value, the more consistent the monthly index.

The monthly indexes can be used as an indication of the most likely trend in prices over the next few weeks or months. The variability can be used to make further judgment about the probability of prices close to the level indicated by the index. The current fundamentals in any given year need to be considered, however, in using seasonal indexes. Usual patterns could be altered by a turnaround in the hog production cycle or other developments.

Seasonal Price Indexes For Slaughter Hogs

Barrows and Gilts. The seasonal price index of monthly average prices for barrows and gilts in the interior Iowa and Southern Minnesota market area is presented in Figure 11-6. The average monthly indexes are shown by the center line, with the shaded area indicating the range above and below the index value. Actual monthly index numbers and variability values are shown on the chart.

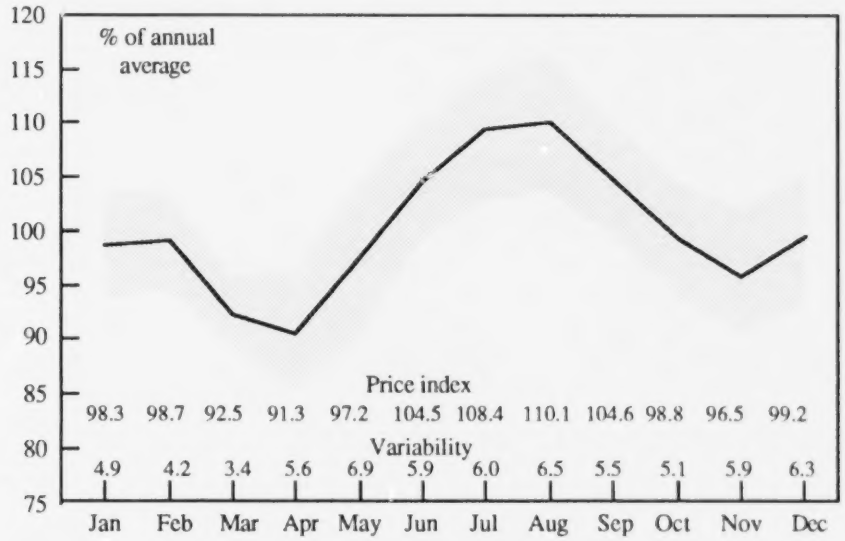


Figure 11-6. Slaughter hogs price index, Iowa/Southern Minnesota, 1979-88

For the 1979-88 period, prices were a little below the average for the year during January to February, then declined further during March and April. Prices trended up during the May to August period, declined through November, then moved higher in December. Prices were above the yearly average during the months of June, July , August, and September and were below the annual average in all other months. Lowest prices occurred during March, April, and November, and highest prices in July and August.

Variability indexes indicate that seasonal index values are more consistent during the first quarter of the year than in other quarters. Price variability, in relation to the average pattern, is greatest in May, October and November due to larger pork production during these periods than during the early winter and summer months. While sow farrowings are fairly evenly distributed throughout the year, more pigs are born during the March-May and September-November periods than in the other months of the year.

Seasonal price variations are influenced by changes in consumer demand for particular fresh and processed cuts of pork and by seasonal tendencies of pork processors to either place pork into cold storage or to reduce inventories. Demand for hams tends to be strong prior to the Christmas and Easter holidays and is stronger in the summer months than in the winter. But demand for fresh pork cuts is typically stronger in the fall and winter months. There is often net movement of pork into cold storage during the fall and in the late winter or early spring when supplies are seasonally large and prices are more likely to be under pressure. Net movement out of storage is more likely in the late spring and summer as prices trend up seasonally.

Sows. Prices for cull sows sold for slaughter show a slightly different seasonal pattern than barrows and gilts, as shown in Figure 11-7. On average for the 1979-88 period, prices were at a seasonal peak in September, then declined from October through December. Prices trended up to reach summer highs during August and September. Highest prices were in February and lowest prices were in December.

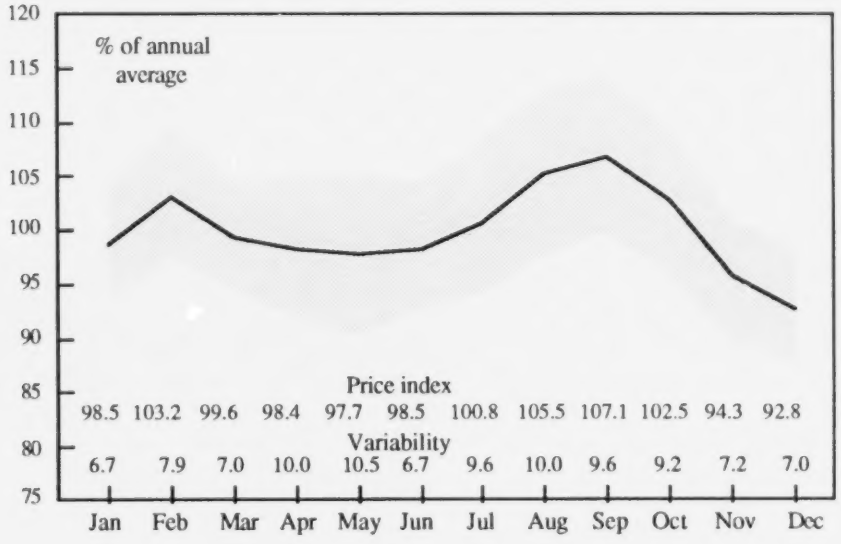


Figure 11-7. Sows price index, seven markets, 1979-88

Monthly price indexes for sows were somewhat less consistent than for barrows and gilts, as indicated by the larger variability indexes. The actual price differential between barrows and gilts and sows is normally quite narrow during the February-April period, often in the $1 to $3 per cwt. range. It is usually largest in June-August and December, often in the $7 to $10 per cwt. range.

Seasonal Price Indexes for Feeder Pigs

Prices of feeder pigs show fairly strong seasonal variation (Figure 11-8). On average during 1979-1988, prices were seasonally high from February to May, but dropped sharply in June and July and remained below the annual average throughout the August to January period. Prices were above the annual average in only the four months from February through May. Stronger prices during this period reflect expectations that slaughter hog prices will be higher in the summer. By contrast, relatively low feeder pig prices during the summer result from expectations of seasonally low slaughter hog prices during the fall.

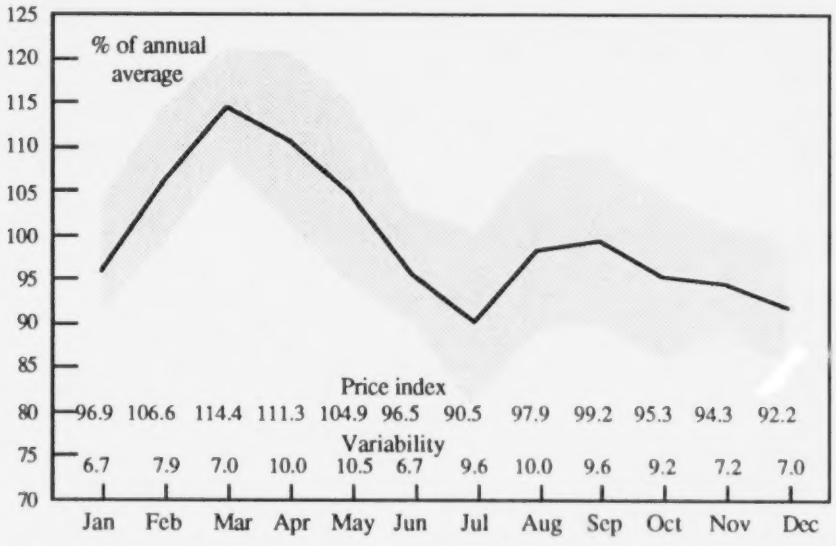


Figure 11-8. Feeder pig price index, Kalona-Knoxville, IA, 1979-88

Seasonal indexes for feeder pigs tend to be less consistent than for slaughter hogs. Variability indexes range from 5.8 to 11.0 with only one index below 7.0.

Probability of Hog Price Changes

The actual pattern of short-term price movements over a period of years is another useful guide to seasonal price changes. Table 11-1 summarizes information on price changes on slaughter barrows and gilts by two-week periods. The percentage of years that prices increased and decreased in the observed period provides an indication of the probability of particular short-term price movements. For example, data from 1979-88 indicate there is a high probability that prices will increase between the first half of May and the last half of May, 9 years out of 10. But there is a very low probability of price strength from the first half to the last half of February, 1 year out of 10.

The likely price changes for slaughter barrows and gilts can be especially useful in decisions about the weight at which hogs should be marketed at a particular time. It can help with decisions on whether to market a bit lighter than normal or to carry hogs an additional week or so before marketing to obtain the most favorable return.

Table 11-1. Hog Price Changes by Two-Week Periods

Hog Price Changes by Two-Week Periods (1979-1988)

Two Week Period	No. of Years Increased	Average % Price Increase	No. of Years Decreased	Average % Price Decrease
Jan - 1st two weeks				
	6	2.18	4	0.57
Jan - 2nd two weeks				
	8	1.55	2	1.12
Feb - 1st two weeks				
	1	0.55	9	1.98
Feb - 2nd two weeks				
	1	0.52	9	2.20
Mar - 1st two weeks				
	4	2.31	6	2.06
Mar - 2nd two weeks				
	3	0.51	7	1.80
Apr - 1st two weeks				
	4	1.12	6	0.36
Apr - 2nd two weeks				
	6	2.75	4	0.27
May - 1st two weeks				
	9	2.24	1	1.14
May - 2nd two weeks				
	6	1.98	4	1.50
Jun - 1st two weeks				
	7	3.73	3	0.77
Jun - 2nd two weeks				
	6	1.81	4	0.80
Jul - 1st two weeks				
	6	1.02	4	1.58
Jul - 2nd two weeks				
	5	1.55	5	1.24
Aug - 1st two weeks				
	8	1.45	2	1.92
Aug - 2nd two weeks				
	1	0.40	9	2.53
Sep - 1st two weeks				
	2	1.47	8	2.49
Sep - 2nd two weeks				
	3	1.55	7	2.25
Oct - 1st two weeks				
	3	0.75	6	3.15
Oct - 2nd two weeks				
	1	2.89	9	1.64
Nov - 1st two weeks				
	6	1.50	4	0.69
Nov - 2nd two weeks				
	8	1.30	2	0.72
Dec- 1st two weeks				
	6	2.30	4	2.10
Dec - 2nd two weeks				
	5	1.75	5	1.38
Jan - 1st two weeks				

Source: Iowa State University Extension Service, M-1238, May 1989, by James Kerndt and Gene Futrell. Based on weekly average prices for U.S. 1-2's, 210-240 lbs. barrows and gilts, Iowa-Southern Minnesota.

Seasonal Price Indexes for Slaughter Cattle

Prices for choice slaughter steers show moderate seasonal variation, with a tendency for highest prices to occur in the second quarter of the year (Figure 11-9). On average during the 1979-88 period, the seasonal peak in price was in May, followed by a downtrend in prices to an October low. Prices were above the annual average during the period from March through July and slightly below the annual average in the other months.

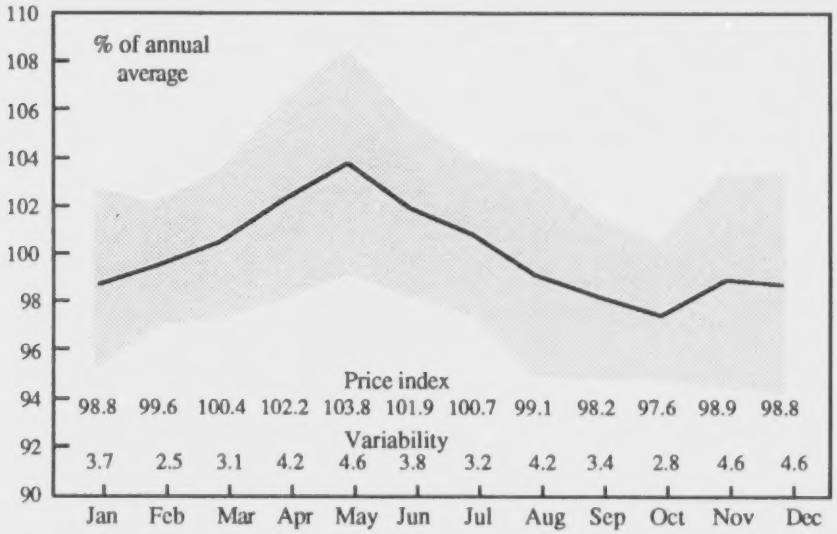


Figure 11-9. Price index for 1100-1300 lb. steers, 1979-1988, Iowa

The variability values shown in the shaded area of Figure 11-9, indicate the seasonal price indexes are most consistent in February and October and are least consistent in May, November and December.

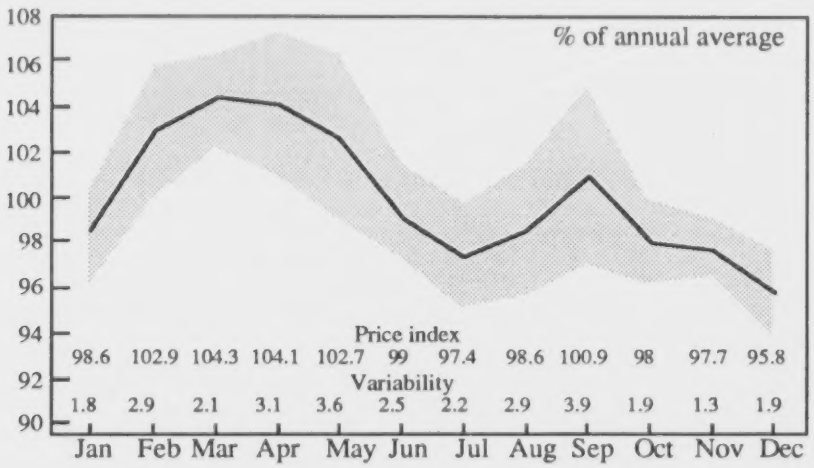


Figure 11-10. Price index of 400-500 lb. steers, 1979-1988, Kansas City

Seasonal Price Indexes for Feeder Cattle

Feeder cattle prices show greater seasonal variation than slaughter cattle prices (Figures 11-10 and 11-11). Marketings tend to be larger during the summer and fall months and relatively lighter during the winter. As a result, prices are usually highest in the February-May period and lowest in the mid-summer or fall.

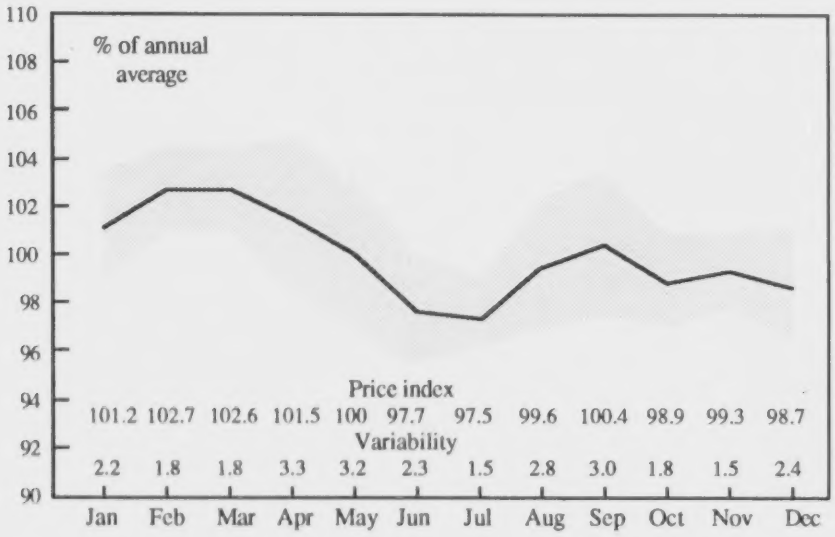


Figure 11-11. Price index of 600-700 lb. steers, 1979-1988, Kansas City

Variability index values were relatively small for both calves and yearling steers, with price indexes least reliable in April, May and September.

Probability of Cattle Price Changes

Table 11-2 contains information on historical price changes for choice slaughter steers, similar to that presented earlier for hogs. This information can be particularly useful for short-term marketing or pricing decisions to assess the likelihood of a near term price rise or decline. For example, the data for 1979-88 indicate a fairly high probability of price strength from the first half of February to the last of the month. However, they suggest a low probability of strength from the first to the last half of July.

Implications For Pricing Strategies

Seasonal price patterns can assist in developing both a cash market and forward pricing strategy. Since futures prices for both nearby and distant contracts have some tendency to rise and fall with the cash market, the historical seasonal price pattern can help determine when forward pricing should be considered.

As the market approaches an anticipated seasonal price peak may be a good time for forward pricing rather than depending on cash sales. For slaughter hogs for example, forward pricing into the next year should usually be completed during the summer price

Table 11-2. Cattle Price Changes by Two-Week Periods (1979-1988)

Cattle Price Changes by Two-Week Periods (1979-1988)

Two Week Period	No. of Years Increased	Average % Price Increase	No. of Years Decreased	Average % Price Decrease
Jan - 1st two weeks	6	1.66	4	1.69
Jan - 2nd two weeks	6	1.89	4	1.59
Feb - 1st two weeks	8	0.94	2	1.04
Feb - 2nd two weeks	6	1.69	4	0.85
Mar - 1st two weeks	6	1.74	4	1.67
Mar - 2nd two weeks	7	1.76	3	1.62
Apr - 1st two weeks	6	2.62	4	1.28
Apr - 2nd two weeks	6	1.41	4	1.10
May - 1st two weeks	5	1.18	5	1.07
May - 2nd two weeks	2	0.91	8	1.47
Jun - 1st two weeks	4	2.46	6	3.03
Jun - 2nd two weeks	3	1.85	7	1.11
Jul - 1st two weeks	2	1.31	8	2.23
Jul - 2nd two weeks	4	1.32	6	1.51
Aug - 1st two weeks	5	2.11	5	0.59
Aug - 2nd two weeks	4	1.26	5	1.63
Sep - 1st two weeks	3	1.35	7	1.60
Sep - 2nd two weeks	4	1.39	6	0.92
Oct - 1st two weeks	5	1.29	5	1.56
Oct - 2nd two weeks	5	1.62	5	1.32
Nov - 1st two weeks	9	1.51	1	0.64
Nov - 2nd two weeks	1	2.20	9	0.67
Dec- 1st two weeks	4	1.56	6	1.11
Dec - 2nd two weeks	5	1.55	5	0.77
Jan - 1st two weeks				

Source: Iowa State University Extension Service, M-1239, May 1989, by James Kerndt and Gene Futrell. Based on weekly average prices for Choice 2-4's, 1100-1300 lb. steers, Iowa-Southern Minnesota.

peaks of the present year. Forward pricing in the fall may not offer as many favorable opportunities because of the general downtrend in prices. With cattle, forward pricing opportunities for the summer and fall months may be best during the second quarter of the year.

Of course forward pricing can be done at other times during the year. Forward pricing should be considered any time during the year that the market offers acceptable profits for your target level. Particularly in the case of hogs, the magnitude of seasonal price changes can be quite different depending on the stage of the production cycle.

Cyclical price patterns can affect the seasonal patterns. For example, when hog prices are rising cyclically (production declining) the seasonal price rises tend to become larger and the seasonal price declines are smaller than normal. When hog prices are declining cyclically (production increasing) the seasonal price rises are smaller and the seasonal price declines are larger than normal. In the remainder of this unit, as several marketing tools are examined, keep in mind the cyclical and seasonal inventory and price patterns.

III. MARKETING TOOLS

As a producer you have a choice:

a) to price livestock on the cash market the day they are sold, or

b) to forward price livestock by using one of several methods.

Pricing livestock on the current **cash market** is still the most widely used pricing method, as indicated in Table 11-3. But interest in forward pricing has been increasing and more alternatives for forward pricing are available now than several years ago. Forward pricing alternatives can substantially lengthen the time period over which you can make a pricing decision. In addition, forward pricing usually widens the range of prices that are available. **Forward contracting, hedging on the futures market, and buying and selling commodity options** are forward pricing tools examined in this section.

Table 11-3. Marketing Management Practices of Iowa Farmers

Which of the following market tools have you used during the last 2 years?	Hogs		Fed Cattle	
	1989	1988	1989	1988
Cash marketing	77.0 %	71.2%	78.4%	80.1%
Forward cash contracts	7.4	11.4	6.3	3.6
Futures market for hedging	15.3	17.8	14.2	15.7
Agricultural commodity options	9.8	7.8	10.8	8.4

Source: Iowa Farm Finance Survey,1989.

CASH SALES

Neal and Andrea live on a small farm outside a western Iowa town where he teaches vo-ag and she works at the bank. They enjoy their livestock, finding it a good release after being inside all day. Their kids are learning a lot of responsibility helping with the cattle as well. Good facilities for a small feedlot were on the farm when they moved there and Andrea was the one who selected the first set of 30 feeder calves for the lot!

They sell on the cash market, and their cattle receipts come only once a year. Luckily, they keep good records on costs and on the carcass grade and yield which they have used to improve their feeder selection and feedlot growth and gains. When Neal teaches marketing alternatives to his class he has to admit he's not into forward contracting, futures, and options. Cash marketing works fine for them.

Most livestock are marketed and priced on the day and at the location where the livestock are sold. Cash sales work best when prices are relatively stable. Cash sales also work fairly well if prices can be forecast with reasonable accuracy, and if production and marketing can be concentrated to some degree into favorable price periods. But with considerable volatility in livestock prices, it is not always possible to closely forecast or to obtain a forecast with a high probability of accuracy. Operations that are geared to year-round production cannot concentrate marketing into particular periods but must market livestock on a regular basis.

Some people feel that if annual purchases, production, and marketings are spread fairly evenly throughout the year, the problem of price variability and risk will be offset. In this way the cash market will provide something close to the average price for the year. Thus, while some livestock will be sold on lower markets, those sales will be offset by the receipts from livestock sold on higher markets.

Selling at the average price for the year however, does not reflect any particular advantage or benefit in marketing. In most years, it is likely to be well below the potential average price that could be attained through selective forward pricing of some sales. If selling livestock at a price **above the average** annual cash price is a marketing objective, forward pricing may need to be used as well.

There are **four methods of livestock marketing** by cash sales: live weight marketing in either mixed or group marketing; live sort and select; carcass grade and yield; and carcass weight or hot carcass.

Live Weight Marketing

The majority of livestock are sold by live weights, with **mixed or group marketing**. Buyers offer a price per hundredweight for the entire lot of livestock. In this way, high quality animals are underpriced while poor quality animals are overpriced. When livestock are sold **live sort and select**, they are sorted into uniform groups by quality grade, yield grade, and/or dressing percentage. The price offered for live sort and select may more accurately reflect the quality offered. However, this method requires more labor, pens, and skill in sorting.

Grade and Yield Marketing

Selling hogs and cattle by grade and yield is an alternative to pricing live animals. Carcass grade and yield selling is different for hogs than for cattle.

Hogs. Interest in grade and yield marketing of hogs has increased in the United States in recent years. Current consumer concern with fat content in meat has brought an awareness to the pork industry and a realization that producers are currently not provided economic incentives to produce the lean pork consumers desire.

The percentage of U.S. slaughter hogs sold on a grade and yield basis has risen from 10.7 percent in 1980 to 13.5 percent in 1987 (Table 11-4).

Table 11-4. Percentage of Hogs Sold to Packers on a Carcass Grade and Weight Basis, Selected Reporting Years

	1970	1975	1980	1985	1986	1987
Iowa	8.0	11.8	11.7	16.7	13.2	10.5
West North Central Region	8.7	16.0	16.7	23.3	19.5	18.0
U.S.	4.8	8.9	10.7	16.2	14.7	13.5

Source: Packers and Stockyard's Statistical Report. Report No. 88-1, Packers and Stockyard Administration, USDA. January 1989.

The motivation behind grade and yield programs is to provide economic incentives in the form of higher prices to the producer for products the consumer wants. These programs should also discourage, through the use of price discounts, products the consumer does not want. The end result is to provide a leaner, more uniform product to the consumer.

In a typical grade and yield program, packing plants post their **live market prices** daily or several times a day. The price represents a market hog weighing 220-240 pounds with an average yield and grade. The packer also establishs lower prices for heavier and lighter hogs that are outside the preferred weight range. The packer makes an offer for each lot in terms of expected weights, grades, and condition.

Grade and yield marketing is based on carcass weight rather than on live weight. To determine what a carcass is worth, packers convert the liveweight range to a base carcass weight range (see Table 11-5). This is done by multiplying the liveweight range by the standard yield. The standard yield varies by liveweight ranges and among packers.

The base carcass price is then determined by dividing each liveweight range price by its respective standard yield. The packer will make quality adjustments by comparing the carcass to packer established grade standards. The adjustments are applied to the base carcass price for each weight range. Final price adjustments for condemned, trimmed, or lost carcasses are made to each carcass. For any one carcass, the total payment to the producer is determined by the following equation:

(Base carcass price + or - premium or discount for grade) x actual carcass weight less any deduction for trim or loss.

Table 11-5. An Example of Liveweight Ranges and Prices, Standard Yields,Carcass Weight Ranges and Price Calculations for Hogs

Liveweight range	Liveweight prices	Standard yield	Carcass weight range[1]	Base carcass price[2]
(lb.)	($/cwt.)	(%)	(lb.)	($/cwt.)
210-219	49.50	72.4	145-152	68.37
220-240	50.00	72.6	153-174	68.87
241-250	49.75	72.8	175-182	68.34
251-260	49.50	73.1	183-190	67.72

[1] Liveweight range multiplied by standard yield
[2] Liveweight price divided by standard yield

Producers have several objections to marketing hogs through grade and yield programs. The major one is the inconsistency of programs among packers. It is difficult to compare the carcass pricing of individual packers, their quality grade standards, standard yields, weight discounts, number of grades, terminology, and settlement reports. Packers normally do not provide detailed information on their grade and yield program prior to settlement. Settlement reports from packers normally do not include all pertinent information regarding the terms of the transaction, and they may include misleading information on gains and premiums. For these reasons, it is almost impossible to compare packer programs prior to the sale.

Packers lack a common standard because they merchandise different products. For example, one packer may specialize in hams while another specializes in sausage. Their individual needs affect the standards, preferred price range, and price adjustments.

Other concerns of producers about selling hogs on grade and yield include:

- payment is delayed until after the hogs are slaughtered, weighed, and graded,
- the producer assumes loss for condemned carcasses and weight loss on carcass trimming,
- grade and yield selling requires the producer to spend more time sorting into preferred weight ranges, and
- the carcass grader is an employee of the packing plant and is not subject to verification by the seller.

How can you benefit from marketing hogs in a grade and yield program? Most packers grade visually, using a combination of backfat thickness, degree of muscling, and carcass conformation. The key, then, is to learn how each packer grades and fit your enterprise into the packer's grading and pricing method. You must closely sort hogs to avoid individual packer discounts and estimate carcass weights. You must also learn the packer's preferred weight range, standard yields by weight range, base live price, grade premium/discount schedule within each range, grade standards, and discounts for trim, and lost and condemned carcasses.

Since comparing programs is nearly impossible prior to sale, keep records on how well your hogs grade and yield under the various packer programs. Once the market outlets have been identified, profits can be maximized through sorting and selling the right hogs to the right packer. Generally, only producers who sell above average quality hogs will increase returns by using the grade and yield method.

Cattle. With cattle sold by the **carcass grade and yield method**, the buyer places a price on both quality (USDA Choice, Select, etc.) and yield grade (USDA 1, 2, 3, 4 and 5). Each quality grade and yield grade combination is priced differently. For example, a buyer may offer $108/cwt. for choice yield grade 3, and discount $10/cwt. for choice yield grade 4. The value of each animal is determined after it is slaughtered and weighed by the packer and graded by a USDA grader.

One advantage of selling cattle by carcass grade and yield is the price is determined more closely to carcass value. Visual appraisal may underestimate the actual grade of some dairy or exotic bred cattle. Another advantage is having a detailed report on how cattle graded, which is useful for selecting animals for the feedlot, evaluating the feeding program, and improving marketing.

To decide whether carcass or live selling is the best method of pricing, consider the expected dressing percent. If you had a live weight bid for $70/cwt. and a carcass weight bid for $107/cwt., you could compare the two bids by dividing the live weight bid by the estimated dressing percent. With a dressing percent of 62, for example, the live bid is equal to a carcass bid of $112.90 ($70 / .62). The trick is to become experienced in estimating the dressing percent of live animals in order to compare the two pricing methods.

Carcass Weight (Hot Carcass)

In the Midwest, cattle are also sold by **carcass weight (hot carcass)**, as shown in Table 11-6. Selling by carcass weight does not require the buyer to estimate dressing percent, but does require an estimate of the quality grade and yield grade to establish the price. This marketing alternative developed largely because buyers had difficulty estimating the dressing percent of mud-covered feedlot cattle. Cattle feeders using carcass weight selling may have difficulty monitoring the carcass weighing by the packer, however.

Table 11-6. Percentage of Slaughter Steers and Heifers Sold to Packers on a Carcass Grade and Weight Basis

	1970	1975	1980	1985	1987
Iowa	32.0%	40.8%	60.7%	40.2%	41.2%
West North Central Region	24.3	32.7	43.1	28.6	28.3
United States	18.6	23.9	29.2	30.4	30.8

Source: Packers and Stockyard's Statistical Report. Report No. 88-1, Packers and Stockyard Administration, USDA. January 1989.

Cash marketing is less complex and requires less market information than forward pricing methods. Dealing with livestock price volatility is one of the main limitations of cash market pricing.

To be effective in the cash market :

- Keep current on day-to-day livestock market developments such as market receipts, demand conditions, prices, and weight discounts.

- Check on prices available at alternative cash markets and compare expected net prices, after adjustments for marketing and transportation costs, shrinkage, and any discounts or premiums that are likely for your livestock.

- Be knowledgeable about both live and carcass pricing alternatives, and differences in the carcass grade and yield programs of various packers.

- Be alert to weather conditions, field work activity, or other seasonal or random factors that may affect marketing and prices.

- Understand usual seasonal patterns and assess whether the current year is likely to follow the normal pattern.

- Be informed of supply conditions, future supply and price prospects, and the stage of the production and price cycles.

These considerations are equally important when livestock are hedged with futures contracts or if options contracts are used. With both methods, livestock are eventually sold on the cash market, with the total return affected by the price received in the cash market and the results of the hedging or options transaction.

FORWARD CONTRACTS

George and Jeannie have 5 acres and a confinement hog unit in central Iowa. Both have employment away from home and both are involved with the hog operation. They market around 100 hogs four times a year. They took a real whipping during the down market a few years ago. Consequently, with better record keeping, they have a close control of their production costs. In addition, they have forward contracted up to three-quarters of their hogs for the last 5 market periods, with delivery to a local buying station.

They feel better knowing they have a locked-in price for their hogs. So far, they would have received a higher price on the cash market for only one of those marketings. With forward contracts, they have received a premium because some of their hogs exceeded the contract specifications.

George says if he were in the hog business on a bigger scale they'd consider other advanced pricing methods, but as it is, they feel they've taken the risk out of a part of their sales.

One method of forward pricing livestock is through cash contracts with packers or other firms or organizations. Forward contracting gives you the opportunity to take advantage of good prices when they are available but your livestock are not ready for delivery. It is probably the most widely used method of pricing ahead. It is also a relatively simple method. The provisions of a cash contract are usually fairly straight forward and easy to understand.

Forward contracting involves signing a contract with a buyer or market agency to deliver a certain number of livestock at a designated location, time, and at a specific price. The livestock that are to be delivered must meet minimum grade, weight, and dressing percent specifications. Livestock not meeting the minimum specifications are discounted. Some contracts allow premiums for exceeding the specifications.

Firms offering forward contracts will establish their price using the futures price adjusted to local market conditions and for the cost of handling the transaction. The buyer may subtract as much as $6.00 per cwt. or as little as $.75 per cwt. from the futures market price to establish the forward contract price. The amount subtracted from the futures market price varies by the type of livestock, size of the contract, seasonal factors, length of the contract period, local market conditions, contract specifications, and the estimated cost of trading.

Forward contracting is useful because the buyer can offset the risk of promising to buy at a specified price by selling a contract on the futures market at the same time. Without the futures market, forward price contracts would not exist. The buyer who offers a forward contract is actually trading on the futures market in lieu of the producer doing so.

There are several advantages of forward contracting:

- there is a specific contract price;
- no margin deposit is required;
- the delivery point and contracts are generally negotiated with a local marketing firm;
- there may be premiums for exceeding contract specifications;

- contracts range in size; and
- no knowledge of futures trading is required.

The disadvantages of forward contracting include: contracts are binding; there is little uniformity of contracts from one firm to another; there may be discounts for failing to meet minimum standards, grade, or weight; delivery is required; delivery shortfall may be penalized; and the delivery period may be restrictive.

Many producers who feel they do not have the knowledge of futures trading that is necessary for hedging will forward price using forward contracts. As additional skills and confidence build in incorporating forward pricing into a marketing program, producers will begin to use the technique that offers them the best returns within reasonable risk limitations. Forward contracting increases flexibility in a livestock marketing program.

FUTURES AND HEDGING

> In March, Chester and Susan White weigh their 200 feeder pigs and find that they are approximately 85 pounds each. They plan to take them to market when they weigh about 220 pounds. They have estimated their production costs and feel that the current market price will provide a return suitably above their production costs. After studying the seasonal and cyclical price patterns for hogs they believe the price will be lower when the hogs are ready to sell. They had used forward contracting in previous years but were disappointed last year when they had to buy hogs to fill a contract when some of theirs had died from a ventilation problem. Therefore, they are considering hedging as a marketing alternative.

Hedging with live hog or live cattle futures contracts is a forward pricing tool available to livestock producers. In the process of hedging, the you will deal with the futures market. This will involve futures contracts, speculators, hedging, long and short market positions, basis, brokerage fees, margins, and margin calls.

Futures Market Facts

The futures market is a market in which the trading is in **standardized contracts** for the sale or acceptance of some product. The contract specifies the volume, the quality, time of delivery, delivery point (if applicable), and the price of the commodity. The futures market provides a way to establish a price for livestock that will be marketed some time in the future. As a producer, you should normally consider using the futures market to forward price livestock if (a) you are unable or unwilling to take the risk of a price lower than available through the futures market, or (b) if the futures market offers a net price that is higher than you expect to obtain through the cash market.

Futures contracts differ from other contract arrangements to sell or buy in that the contracts are standardized, are negotiable, and are traded on an organized exchange, such as the Chicago Mercantile Exchange. You can either buy or sell in a futures market, depending upon the market position you wish to take. Trading is done through broker-members who handle the futures transactions in return for a commission or brokerage fee.

Trading on the futures markets is on a margin basis. Only a small percentage of the market value of the contract is actually placed on deposit in making a sale or purchase.

Selling a livestock futures contract obligates you to deliver the livestock, as specified by the contract, and at the price the contract was sold. Purchase of a futures contract is an obligation to accept delivery of the product. In actual practice, however, only a small percentage of the contract obligations are fulfilled by delivery of the product. Most are met by taking an offsetting position in the futures market. If you had sold an April hog contract, your obligation for delivery could be met by either delivery or by the purchase of an April hog contract before the contract maturity date. Persons who sell a futures contract are considered "short" the market and those who purchase a contract are "long" the market.

The futures markets offer a way to reduce or transfer market price risk through **hedging**. Someone in the process of producing a commodity or who holds inventory of the product can remove much of the price uncertainty during the production or storage period by selling futures contracts. This is a "short hedge" and sets the approximate selling price, with the risk of price change transferred to the buyer of the contract. Someone who wants to obtain inventory of a product for processing or other use can set the approximate purchase price in advance by buying futures contracts. This is called a "long hedge."

Speculators in Futures Markets

The person who assumes the price risk in a futures market is a speculator. Speculators either buy or sell in a market, depending upon the direction they expect the market to move. Most of their market positions are liquidated by taking offsetting positions in the market at a later time. Speculator participation in futures markets is necessary to provide "fluidity" so that participants can readily buy and sell contracts. Speculators hope to profit from their futures transactions. They profit if they can buy a contract for less than was paid for it; or if they can sell a contract for more than they paid for it. In reality, many commodity market speculators lose money. Whether they profit or lose depends on their ability to accurately forecast futures price changes.

Hedgers in Futures Markets

A hedger in the futures market uses the market to obtain protection against adverse price changes. There are two general types of hedgers--one who is trying to protect against a price decline and the other against a price rise.

Short Hedger. Potential short hedgers in the livestock futures market are producers who have livestock that they plan to market at some future time, but want to protect against a possible price decline. This could be either a finisher who has bought feeders or a farrow-to finish or cow-calf operator. Each has livestock on the farm and will eventually sell them on the cash market. Producers become short hedgers if they sell futures contracts that are applicable to livestock they plan to market.

Long Hedger. Potential long hedgers in the futures market plan to acquire livestock or livestock products at some future date. They do not want to obtain the commodity immediately but want to protect against a possible rise in cash prices. A packer, for example, may hedge the prices of future slaughter needs. In the cattle business, a feeder who hedges the purchase price of yearlings in the feeder cattle futures market is a long hedger. Another example of a long hedge would be a producer who buys corn futures to establish a price for corn that will be needed to finish out some livestock.

Live Hog and Live Cattle Futures Contracts

The principal market for trading in live hog or cattle futures contracts is the Chicago Mercantile Exchange (CME). The contracts are for 30,000 pounds of liveweight hogs, or 40,000 pounds of liveweight cattle. "Mini-contracts" one-half of the CME contract size are also traded on the Mid-America Exchange in Chicago, with other contract specifications identical to those for the CME contract.

The appendix shows commodity specifications, delivery units, contract months, delivery days and delivery points for both live hog and live cattle contracts. A more detailed presentation of the contract specifications, tolerances, substitution provisions, delivery

procedures and other related information for live hogs, cattle, feeder cattle, and pork bellies is available from most brokerage firms or the Chicago Mercantile Exchange.

Delivery on Livestock Futures Contracts

Most of the time livestock futures contracts are settled and the futures obligation is fulfilled by making an offsetting transaction in the futures market before the maturity date of the contract. Under some conditions, however, physical delivery can be advantageous. These conditions and the considerations and procedures for making delivery on a contract are discussed in *Pm-1075h, Delivering on a Hog Futures Contract* and *Pm-1075i, Delivery on a Live Beef Futures Contract.*

A Hedging Example

Consider the example of Chester and Susan White outlined at the beginning of this section. Because the Whites own live hogs they are **long** in the cash hog market. That is, they are holding live hogs in inventory which they intend to sell at a later date. They are at risk if the price drops. To hedge against declining prices, they could take an opposite or **short** position in the futures market. Being short in the futures market means they would have sold a futures contract and not yet have closed out this position by an offsetting purchase or delivery. If they select this alternative, they would keep their hogs on inventory but sell a futures contract. They are long in the cash market and short in the futures market.

March: The first transaction

Estimated localized prices	
June futures	$ 48.00 per cwt.
Expected June basis	-3.00 per cwt.
Localized futures price	$ 45.00 per cwt

There are some costs associated with hedging in addition to the production costs of the hogs. These include a brokerage fee and interest on margin deposit. The brokerage fee is the broker's charge for conducting your futures transactions. The margin is a cash deposit given to the broker to guarantee the fulfillment of the contract. Lost interest on this deposit becomes an expense to the hedger.

Estimated Costs	
Brokerage fee	$ 0.20 per cwt.
Interest on margin	0.15 per cwt.
Cost of production	39.00 per cwt.
Total cost	$ 39.35 per cwt.

Given a cost of $39.35 and an expected price of $45.00, the Whites expect to make a profit of $5.65 per hundred weight.

In March, the Whites sell a hog futures contract for June delivery. The price of June hogs is $48.00 per hundred weight for their first transaction. They expect the **basis** in June to be $3.00. The basis is the difference between the futures price and the local cash price. The price they expect to receive for their hogs is $45.00.

Suppose that cash and futures prices declined by June. In this case, the Whites would have protected themselves against the decline of the cash price. The second transaction is outlined below.

June: The second transaction (if prices go down)

The cash and futures prices have gone down by June. The local cash price for hogs is $40.00. The hogs weigh about 220 pounds and the Whites ship them to the local market. At the same time, they offset their hedge by buying back a futures contract.

Profit/loss on futures	
June futures in March (sold)	$ 48.00 per cwt.
Minus June futures in June (bought)	-43.00 per cwt.
Profit	$ +5.00 per cwt.

The Whites made $5.00 on their futures transactions by buying the contract back for a lower price.

Total return	
Cash price	$ 40.00 per cwt.
Profit on futures	+5.00 per cwt.
Total gross return	$ 45.00 per cwt.

Note that the basis was $3.00 as they expected ($43.00 for futures and $40.00 for cash). Therefore, they received the gross return of $45.00 as they expected. Now they can determine the actual net price received by subtracting their hedging costs.

Net return	
Total gross return	$ 45.00 per cwt.
Minus cost of production	-39.00 per cwt.
Minus brokerage fees	-0.20 per cwt.
Minus interest on margin deposit	-0.15 per cwt.
Equals actual net profit	$ 5.65 per cwt.

What if the prices had gone up from March to June? Suppose that the local cash price for hogs is $50.00. As a second transaction they would have sold hogs on the cash market and bought back a futures contract.

June: The second transaction (if prices go up)

The cash and futures prices have gone up by June. The local cash price for hogs is $50.00. The hogs are about 220 pounds and the Whites ship them to the local market. At the same time, they offset their hedge by buying back a futures contract.

Profit/loss on futures	
June futures in March (sold)	$ 48.00 per cwt.
Minus June futures in June (bought)	-53.00 per cwt.
Profit or loss (loss)	$ -5.00 per cwt.

The Whites lost $5.00 on their futures transactions by buying the contract back for a higher price.

Total return	
Cash price	$ 50.00 per cwt.
Loss on futures	-5.00 per cwt.
Total gross return	$ 45.00 per cwt.

Note that the basis was $3.00 as they expected ($53.00 for futures and $50.00 for cash). Therefore, they received the gross return of $45.00 as they expected. Now they can determine the actual net price received by subtracting their hedging costs.

Net return	
Total gross return	$ 45.00 per cwt.
Minus cost of production	-39.00 per cwt.
Minus brokerage fees	-0.20 per cwt.
Minus interest on margin	-0.25 per cwt.
Equals actual net profit	$ 5.55 per cwt.

If in June the prices were up, the actual hedge return is ten cents less than if the prices had gone down. This is because the price rise resulted in a **margin call**. Because they were losing money on their futures contract, the Whites were required to deposit more margin money to guarantee the fulfillment of the contract. The added interest on the margin deposit increased their hedging costs.

Did the Whites lose money by hedging and when the market went up? No, they lost an opportunity they did not know about before. They were happy with the decision at the time they hedged. Hind sight is a poor tool in decision making.

Localizing Futures Prices

The futures market price represents a specific grade and weight of livestock at a delivery point. The price must be adjusted to reflect equivalent local market cash prices. This can be done by either subtracting a normal "basis" or differential between the two markets or by subtracting the estimated costs of transporting and marketing livestock to the delivery point or to one of several alternative delivery points.

Basis. The most common method of localizing futures prices is to subtract an estimate of the basis from the futures market price. The basis represents the expected difference between the local cash market price and the futures market price at the time the livestock are sold.

Historical basis patterns can be used to estimate the basis for different marketing months. One conservative approach is to use a basis value as large as the actual basis has been two-thirds of the time, i.e. there is only 33% chance of being wider.

Example: Local Basis

July futures	$48.00 per cwt.
Expected basis	- 1.81 per cwt.
Localized futures price	$46.19 per cwt.

Delivery Costs. The costs of actually delivering on a futures contract include transportation, shrink loss, commission fees, yardage and feed charges, grading charges, and any quality discounts.

Example: Delivery costs

Transportation[1]	$0.25 per cwt.
Shrink (1% added)[2]	$0.48 per cwt
Commission fee, yardage charge, grading fee, etc.	$1.00 per cwt.
Delivery point discount	$0.25 per cwt.
Quality discount[3]	$0.25 per cwt.
Total delivery cost	$2.23 per cwt.
June futures price	$48.00 per cwt.
Delivery cost	- 2.23 per cwt.
Localized futures price	$45.77 per cwt.

1. Transportation costs include only the added cost of hauling to the delivery point instead of to the local market.
2. The shrink factor will be the added shrink loss to the delivery point. If hogs normally lose 3% to the local market and 4% to the delivery point, then the added shrink would be 1%. The 1% would be multiplied by the price to obtain the shrink value.
3. The quality discount is an estimate of the per hundred weight discount, if delivery was made. The futures price reflects no discounts, therefore, producers often incur some discount when delivery is made.

In deciding whether or not to deliver on a livestock futures contract you need to carefully compare delivery costs against the cost of repurchasing the contract and selling on the cash market, that is, the basis. Futher discussion of basis appears on page 11-30.

Other Costs

Localizing the futures price is the first step in developing an estimate of potential returns from hedging. Three additional costs also need to be subtracted from the localized price to obtain the estimated net return from a hedge. These are the brokerage or commission fee, interest on margin money, and cost of production.

Brokerage Fee. Since futures transactions must be made through a member of the Exchange, a brokerage fee is charged. The fee for a Mercantile Exchange contract may range from $50 the $100 per contract for a round-turn (a buy and sell or sell and buy), or around 15 to 20 cents per cwt. The actual fee varies by brokerage firm and negotiation based on the number of contracts traded.

Interest on Margin. Futures contracts are traded on a margin basis. Margin represents your equity in the futures contract and your broker's guarantee that you will not default on the contract. If you are hedged, margin calls mean you are protecting your price. Margin requirements vary somewhat by brokerage firm, client, and level of prices, but the initial margin will normally range from 5 to 10 percent of the contract value. Additional margin deposits are required if there are changes in the futures market price that are adverse to the position taken.

Interest on the margin money should be considered as a cost of hedging. However, the amount will depend on the current interest rate, how long the contract is held, and the direction and amount of price change on the futures contract. As a result, only a rough estimate of the expected interest charge is usually possible.

Cost of Production. A very important factor in deciding whether or not to hedge is the cost of production in relation to the expected net futures price. This adds emphasis to the need for good records on your livestock enterprise so that cost can be realistically and closely estimated. The more accurate the cost data, the more accurate the estimate of returns will be. Knowing your breakeven prices is a key factor in marketing decisions.

Deciding to hedge. The expected net futures price, minus the expected cost of production, gives an estimate of the potential net profit from hedging. The level of returns that will cause a producer to hedge will vary, depending upon cash price expectations, and the price risk the individual producer is willing and able to take. As a producer, you must decide what level of return you will accept depending on the cash price expectations and the price risk. If there is a high probability of a price decline, you may be more willing to hedge, thereby reducing your risk of a decline in the cash price. If there is a good chance that prices will rise, however, you may be more willing to risk the possible change in cash price and forego hedging.

Basis Considerations

Why is your local cash price for a commodity lower than the quoted futures price at the Chicago Mercantile Exchange? If you can explain this, you have at least a general understanding of **basis**. Basis is the difference in price between your local cash price for a commodity and the current price for a futures contract. This futures contract is usually based on the nearest futures delivery month. For example, your local market may be selling hogs for $45.00 per hundred weight on March 15. That same day a futures contract for April live hogs is $46.85. The basis is $1.85 (i.e. 46.85 - 45.00 = 1.85). If you feel cheated over your local price, try first to understand basis.

While the term "basis" is used to describe the difference, it does little to explain this difference. For slaughter cattle and live hogs, the difference between your local cash price and the delivery point cash price is essentially transportation cost. If hog prices are $46.00 per hundred weight at the delivery point and it costs $1.00 per hundred weight to ship hogs, you can expect the local cash price to be approximately $45.00. The basis on feeder cattle

reflects the geographic price difference between local markets and U. S. average feeder steer price.

Although basis is somewhat predictable it does change. These changes are due to the demand for the cash commodity and the location of the local market. When the demand is strong and producers are reluctant to move their livestock, buyers may become eager to fill their orders and be willing to bid over the current cash price to do so. The result would be a smaller or narrower basis. This situation could also be reversed. For example, many producers may want to reduce their livestock numbers due to grass and hay shortages. In such a case, the market may be over supplied, buyers would not be as interested in immediate delivery, and they would not be willing to pay as much. The result would be a widening of the basis. Basis, then, can be either negative or positive depending on time period and location.

The cash price and futures price of a commodity may vary a great deal. The basis, on the other hand is more stable and predictable. Although it narrows as the delivery month nears, the cash and futures prices make similar changes resulting in a somewhat stable basis. This stability allows producers to hedge livestock, making profits on the futures markets despite decreases in the cash market, as illustrated in Figure 11-12.

If you use only the cash market as a means of selling livestock, you may not be concerned with the basis. On the other hand, if you cash contract, hedge, or use options you ought to understand basis. This is the function of the market that allows you to secure a price by hedging.

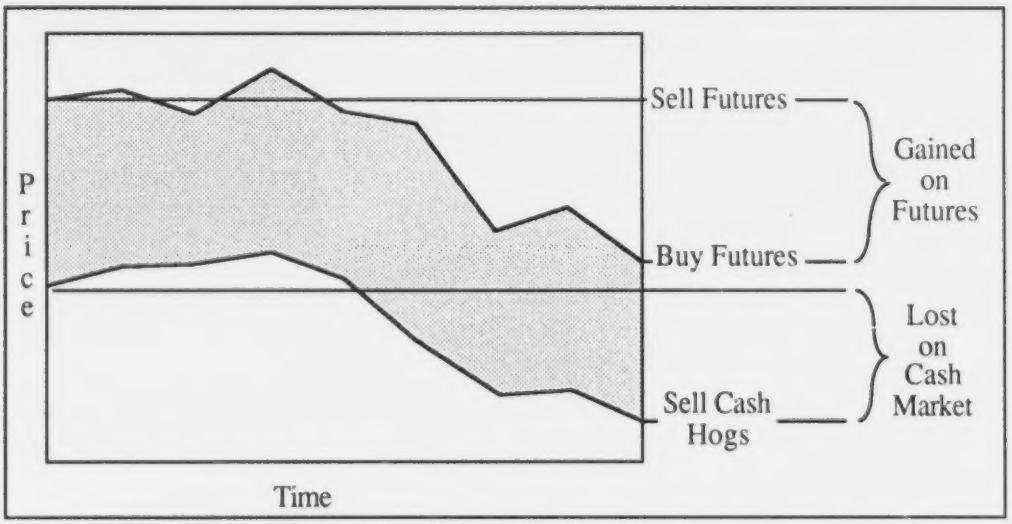


Figure 11-12. Hedging gains and losses due to little change in the basis.

For example, suppose you had market hogs to sell but the hogs are not quite finished out yet. At the same time you would like to secure the current market price. You could sell a futures contract on live hogs. Later you would buy back the futures contract, thereby fulfilling your obligation of delivery. If the basis at contract maturity was close to the level expected, you could sell you hogs on the cash market at a net price similar to your original target price. As illustrated on Figure 11-12 you gained about as much on the futures market as you lost on the cash market due to declining cash prices. The result is that the net price obtained was near the amount you tried to secure by hedging.

OPTIONS ON FUTURES CONTRACTS

Bryan and Brenda live in northwest Iowa and use puts to protect their cattle breakeven price. They use options on futures contracts to set a minimum price just above their breakeven on the 1000 head they market each year. That way if the cash price goes up they can still take advantage of the rise while feeling secure that they are protected against losing money if the price falls.

Brenda keeps an eye on the futures prices. She and Bryan have decided they don't want to spend more than $2.00/cwt. for their "price insurance" against a downturn in the market. To protect part of their marketing for this year, they bought puts which give them the right to sell June futures for $78.00. Besides subtracting the put cost of $1.20 and the transaction cost of $.40, Bryan and Brenda usually count on a cash price $2.00 under the futures (basis). So, with this set of cattle, they are assured of getting a net price of $74.40.

Their records show they need to get at least $69.00 for the cattle in order to cover their fixed costs and variable costs. Bryan says whether they try to lock in a profit on the cattle depends on the costs of the puts and the outlook for their corn, soybean, and popcorn crops.

Brenda admits that it wasn't until they concentrated on learning about options that they took advantage of this marketing alternative. "We used to worry about whether each one of those steers was going to make money or lose money," Brenda says. "Now, with a locked in floor price, the lot full of steers looks like an income opportunity for us."

Have you ever wanted to lock into a good price when your steers were still 5 months from market? Wished you could insure that your returns would cover your hog production costs? Wanted to count on a price without putting up margin money? Have a chance to change your market strategy as prices change? Perhaps **options** are the answer for you.

Options give you the right, but not the obligation to buy or sell a futures contract, representing a fixed amount of a commodity before a specific date at a specific price. In return for a premium fee, you maintain the right to exercise the option. You do not have to expose yourself to limitless risk. You know the entire risk at the onset. Options do not limit you if prices go up. Options give you the chance to change with the market. Options offers you a new way of looking at forward pricing your livestock. In this section you will have the opportunity to learn about how options work, the components of options and how to use options. You will learn to match your marketing strategy with market conditions.

What Is An Option?

An option is the right but not the obligation to buy or sell a futures contract at a specified price within a given period for a certain cost. The elements of an option are:

1. Action - the right to buy (call) or sell (put).
2. Commodity - the underlying commodity futures contract.

2. Commodity - the underlying commodity futures contract.

3. Strike Price - the price at which the right to buy or sell is acquired.

4. Expiration date - the last day the option can be exercised.

5. Premium - the cost of the option.

Each of the elements of an option, except the premium, is predetermined by the livestock exchange. The **actions** that can be taken on the options market are to **buy or sell.** A "put" option is the right to sell a futures contract and a "call" option is the right to buy a futures contract. The right to buy or sell livestock options deals with underlying livestock futures contracts rather than the physical commodity. An option to buy or sell gives you the "right" to buy or sell the futures contract but there is no "obligation" to do so. The decision whether to exercise an option, let it expire, or to resell it will depend upon subsequent market development after the option is acquired. Choice is the main feature of an option.

Puts and calls are two separate markets. They are not opposite sides of the same market. The value of a put will move in the opposite direction of changes in the futures and cash markets; the value of a call will move in the same direction as the futures and cash markets. If you are holding a commodity for future sale you generally want to buy a put to offset a price decline. If you plan to purchase livestock, buying a call will offset a price increase.

The **underlying futures contracts** are specified by the exchange. The live cattle, feeder cattle, live hogs, and pork bellies futures contracts have specifications of quantity and quality as shown in Table 11-7. Further specifications are shown in the appendix.

Table 11-7. Livestock Futures Contract Specifications for Options Trading

Contract	Quantity	Specifications
Live Cattle	40,000 pounds (35-40 head)	Choice steers weighing between 1050-1200 pounds
Feeder Cattle	44,000 pounds (60-70 head)	Feeder steers weighing between 600-800 pounds that at slaughter will grade 60 to 80% USDA choice
Live Hogs	30,000 pounds (130-150 head)	USDA # 1-3 grade hogs weighing between 200-230 pounds
Pork Bellies	40,000 pounds	Frozen pork bellies of 12-14 or 14-16 pounds

Options are traded for a range of prices called **"strike prices"** that centers around the current value of the underlying futures contract. The strike price of an option is the price at which a futures position is taken if the option is exercised. For live cattle, live hogs, and feeder cattle, the strike prices listed by the exchange are in $2/cwt. intervals both above and below the current futures levels, and at $4/cwt. intervals above and below current futures for pork bellies. For example, put and call options might be offered on June live hogs at strike prices ranging in $2 intervals from $44 to $56 per cwt., when the June hog contract is trading at $50/cwt. These strike prices represent the different levels of price protection or price insurance that are available in a particular options market.

The **expiration date** of exercising an option is prior to the delivery period for the underlying futures contract for live cattle, live hog, and pork bellies. These options expire the last Friday that is at least three business days prior to the first business day of the delivery month. Feeder cattle options expire on the same day as the underlying futures contract, on the last Thursday of the delivery month. This is because of the cash settlement feature of the feeder cattle futures contract.

Premiums are the only element of options trading determined through competitive bidding between buyers and sellers on the trading floor. Buyers pay premiums for the right to exercise an option. Sellers (writers) receive those premiums as compensation for the risks they bear. An options transaction occurs when a buyer and a seller agree on a premium price.

For the **option buyer**, the premium is paid up front, and other than for the commission costs, is the total cost of the options transaction. The premium is the maximum loss that an option buyer can experience if the option is not exercised. If the option is exercised, and a futures contract is bought or sold, there will be commission costs and there may be margin deposits and margin calls for the remainder of the life of the contract.

The cost and loss exposure for an **option seller** is quite different than for a buyer. The option seller receives the premium paid by the buyer in the initial transaction. That is the return for the risk of being willing to write or grant an option. But since the writer is guaranteeing the right to buy or sell a futures contract at a specified price, the loss potential is unlimited, depending upon market price trends and the buyer's decision on exercising the option. As a result, margin deposits are required for writers (sellers) of options.

The premium value of a specific option, determined in the options market by the interaction of buyers and sellers, will be influenced primarily by five factors--the strike price in relation to the price of the underlying futures contract, the volatility of the market, the time remaining before the option expires, the current short-term interest rates, and market expectaions. The price relationship determines whether the premium has what is called **"intrinsic value"** and the time and volatility factors are reflected in **"time value."**

Intrinsic value can be defined as the positive difference between a strike price and the underlying futures price. For a put option, the right to sell, there is intrinsic value if the strike price is above the futures price. For a call option, the right to buy, there is intrinsic value if the strike price is below the futures price. An option that has intrinsic value is said to be "in-the-money" and one that has no intrinsic value is "out-of-the-money." "At the money" is a term used if the underlying futures price is the same as the strike price for the option.

Time value, sometimes called "extrinsic value," reflects the amount of money that buyers are willing to pay in hope that an option will be worth exercising at the expiration

date. It is largely the premium paid for possible price volatility on the time remaining on the option. Time value of an option is greater in a volatile market. Time value declines as the option approaches expiration. It has no time value at expiration. Any remaining premium value at expiration will consist entirely of intrinsic value.

Table 11-8. June Live Hog Options Market When the Current Futures Price is $48.05

Strike Price	Premium	
	Call	Put
($/cwt)	($/cwt.)	($/cwt.)
44	5.40	.75
46	3.35	1.30
48	2.15	2.30
50	1.25	3.40
52	.75	5.40
54	.40	6.35
56	.02	8.30

Table 11-8 illustrates a possible set of strike prices and premiums for put and call options on a live hog futures contract. At the costs listed when hog futures were at $48.05, you could purchase a June $46 strike price put option at a cost of $1.30 per cwt. ($1.30 x 300 cwt. = $390) plus commission for a total cost of $481 for a 30,000 lb. contract. This would set a price floor on hogs to be marketed in June at $44.70 ($46.00 - 1.30) per cwt. minus the expected basis in May, when the option expires.

Since put options have no intrinsic value when the strike price is below the futures price, the $46 strike price option in the example has no intrinsic value. The premium represents only the time value of the option, the opportunity to insure against a price below $46 per cwt. by June.

As a seller, you could set a higher price floor by purchasing a higher strike price option and paying more premium. An "in-the-money" strike price put option of $50/cwt. would cost $3.40 including $1.95/cwt. ($50 strike price less futures price $48.05) of intrinsic value in the premium. If you are a hog buyer, and expect a sharp rise in hog prices you might consider purchasing $52 strike price call option at a premium cost of $.75/cwt. to insure that purchase costs in June would not be more than $52, adjusted for costs and basis.

Your Right to Choose

Once you have taken a livestock options position, three alternatives are available to you. You can exercise the option if that appears to be advantageous, you can resell the option on the exchange, or you can let the option expire.

Exercising the option would mean buying or selling a futures market contract at the price specified by the option. You would consider doing this if price movements in the market had made this a profitable choice. You could do this any time before the expiration date of the option.

Most people, however, choose to offset their position by re-selling the option before it expires. The option would have some intrinsic value to the extent the strike prices was above the cost of being in the futures market (commission charges and margin costs).

The other alternative, letting the option expire, would be the logical choice only if the option had lost all of its value. For example, if you had bought a June $46 strike price put option and the June futures market in late May was $52, there would be no reason to exercise the option or resell it, because its value would be zero. You would let it expire and, having had price protection, would now take advantage of the higher market price. The cost of the price insurance would have been the premium paid initially.

Option Price Reporting

Commodity news, video marketing, some wire services, and other media provide options trading prices throughout the day. Settlement prices for commodities are listed on the financial pages of some newspapers. Figure 11-15 reflects the closing live cattle premium prices for one particular trading day. As the underlying futures prices change, so do the call and put options premiums. To calculate the actual dollar premium value, multiply the premium (quoted in cents per pound) times 40,000 pounds per contract for live cattle, 44,000 pounds for feeder cattle, and 30,000 pounds for live hogs.

CATTLE LIVE (CME) 40,000 lbs.; cents per lb.

Strike	Calls-Settle			Puts-Settle		
Price	Feb-c	Apr-c	Jun-c	Feb-p	Apr-p	Jun-p
74	3.60	2.85	0.77	0.00	0.60	3.02
76	1.72	1.52	0.35	0.12	1.22	...
78	0.32	0.65	0.15	0.72	2.35	...
80	0.02	0.22	0.07	...	...	...
82	0.00	...	...	...	...	...
84	...	...	...	...	...	...

Est. vol. 3,691, Mon vol. 1,212 calls, 1,257 puts
Open interest Mon; 27,890 calls, 41,466 puts

Figure 11-15. Live cattle premium quotes, Chicago Merchantile Exchange, Jan. 16, 1990.

As shown in the figure above, the premium for a February call option at a strike price of 76 cents per pound closed at 1.72 cents. The call option had a value of 1.72 cents times one contract of 40,000 pounds or $688. The 78 put option on April live cattle settled at a premium value of 2.35 or a total premium value of $940.

Options Strategies

How can options be used to forward price your livestock? Some possible strategies described on the following pages include:

1. If you have livestock to sell, place a floor on price by buying a put, maintaining the potential to gain from rising prices.

2. If you are buying livestock, place a ceiling on price by buying a call option, to provide a level of protection against loss from rising prices, but maintaining the chance to benefit from a price decline.

3. Establish a floating price floor by buying a put option and, if the price goes up, sell it and buy another put option at a higher strike price.

4. Combine selling a futures contract or cash forward contract with options by buying a call. This is called a synthetic hedge or hedging a hedge.

5. Fence a price by buying a put option to set a price floor and selling an out-of-the-money call option to set a ceiling price.

1. Setting a Floor

A. Buy a PUT option at a strike price that will provide some level of price protection.

B. The PUT option sets a floor price. You are not locked in if price goes up.

C. Exercise the option if prices declines, or resell it at the higher premium.

D. Let the option expire if futures price goes above the strike price and the premium value drops to zero.

E. Your cost for price insurance equals the premium paid for the put and transaction charges.

Example of placing a floor price on hogs:

A. Buy August PUT option at $52.00 strike price for a premium of $1.25/cwt.

B. Set a floor price:

strike price	*$52.00*
premium	*- 1.25*
basis	*- 1.27*
costs	*- .30*
	$49.18

C. If cash and futures prices drop the value of the PUT will rise:

Exercise the option to sell the futures contract, or resell the put option at a higher premium.

D. If prices rise:

Let the option expire and sell on the improved cash market

E. Your only cost is the premium of $1.25 to buy the PUT.

$1.25 x 300 cwt. (one hog contract is 30,000 lbs) = $375.00

2. Place a Ceiling on Price

A. Buy a CALL option at a strike price that will provide some level of protection for the livestock purchaser. This sets a buying price ceiling but leaves the downside potential open if prices decline.

B. If prices rise, exercise the option or resell it at a higher premium.

C. If the futures price drops below the strike price, let the option expire. It will usually have a zero value then.

Key point: Premium and commission charges are the cost of the price insurance against loss.

Example placing a ceiling for feeder cattle:

A. Buy a March feeder cattle CALL option at a \$76 strike price for a premium of \$1.55 / cwt.

Estimated maximum buying price:

Strike Price	*\$ 76.00*
Premium	*+1.55*
Basis	*- 1.20*
Costs	*+ .25*
	\$ 76.60

B. If cash prices rise the value of the CALL will also rise:

Exercise the option or resell the CALL at a higher premium.
Purchase on the cash market.

C. If the futures price drops below \$76.00 the value of the CALL will eventually fall to zero:

Let the option expire,
lose \$682.00 in premium costs (\$1.55 x 440 cwt.),
lose commission costs (\$.25 x 440 cwt. = \$110.00), and
gain by purchasing less costly feeder calves on the lower cash market.

3. Establish a Floating Price Floor

A. Set an initial price floor by buying a PUT option.

B. If price holds steady or declines, stay with this position.

C. If price goes up, sell the PUT option at a loss; buy another PUT at a higher strike price. This sets a higher floor price, but it may cost less than paying the premium for a higher initial strike price.

D. If the price continues to rise, repeat the process.

E. If the price levels out or declines, you have locked in a higher price. Exercise the option or resell the put at a higher premium price.

Example of establishing a floating price floor for hogs:

A. Buy an August PUT option at a $44.00 strike price. Pay premium of $.50 /cwt. on underlying $45 futures contract. The $46 strike price PUT was available for a $2.65 premium.

B. If the market holds steady or declines, stay with this position.

C. If the futures market goes up to $47/cwt. and:

1.) the premium on the $44 strike price PUT drops to $.07/cwt.
2.) the premium of $46 strike price PUT drops to $.85/cwt.

Sell the $44 PUT for $.07/cwt. minus commission
Buy a $46 PUT for $.85/cwt. plus commission

The cost of the $46 PUT to you is $1.28:

$.50 for $44 PUT + $.85 for $46 PUT - gain of $.07 on $44 resale.

Cost of the $46 PUT to you if you had purchased the $46 PUT initially would have been $2.65.

4. Hedge a Hedge

Hedging a hedge (called a synthetic hedge) combines futures or cash contracts with options.

A. Sell a futures contract or cash forward contract at an acceptable price.

B. Buy a CALL option, preferably an out-of-the-money CALL.

C. A floor price is provided by the futures or cash forward contract price minus the call premium, giving you price protection.

- If the market rises, the premium value of the CALL option will go up so you can sell it at a profit.
- If the market goes down, the value of the CALL option will drop so you can let it expire.

Key point: You protect your price with futures or forward cash contract while gaining with increased premium value of the CALL should prices rise. If the market goes down, your maximum loss is your original premium.

Example of hedging a hedge with hogs:

A. On the futures market:

Sell October Futures	*$44.75*
Basis	*- 1.30*
Costs	*- .35*
Estimated Hedge Price	*$43.10*

B. Buy a CALL option at a $44 strike price for $1.00

C. If the market goes up you realize a higher return.

Estimated hedge price	*$43.10*
Premium to buy CALL	*- 1.00*
Income from selling CALL	*+ 2.50*
	$44.60

If the market goes down your lowest price is $42.10.

Estimated hedge price	*$43.10*
Premium to buy CALL	*- 1.00*
	$42.10

5. Fence a Price

A. Buy a PUT option to set an acceptable floor price for your commodity.

B. Sell an out-of-the-money CALL option at a level above that which you realistically expect the market to reach. You receive the premium paid by a more optimistic buyer of the CALL option.

C. If the price declines, the premium value on the PUT increases and the premium on the CALL declines.

D. If the price goes up, the premium value on the CALL option increases and the premium value of the PUT option decreases. You (the seller) must pay a margin deposit but the value of the cash commodity is also going up.

By fencing, you can lower the premium cost of a given floor price compared to only buying a PUT. However, fencing a price limits the opportunity to benefit from a price rise, you may have margin costs, and you could be forced into a short futures position.

Example of fencing strategy for forward pricing hogs:

A. Buy a $40 strike price April PUT for a premium of $1.20/cwt.

B. Sell a $46 strike price April CALL and receive a premium of $1.55/cwt.

C. Bottom value of the fence:

Strike price of PUT	*$40.00*
PUT premium cost	*- 1.20*
Basis	*- 2.50*
CALL premium received	*+ 1.55*
	$37.85

D. Top value of the fence:

Strike price of CALL	*$46.00*
CALL premium received	*+1.55*
Basis	*- 2.50*
PUT Premium cost	*- 1.20*
	$43.85

Writing Options. Producers are most likely to be option buyers as part of their price risk management strategy, but there may be situations where selling an option (writing an option) may be considered. One example has been illustrated already in the "fence" stategy. Straight option writing, however, has much greater risk. The premium received is the only offset to the risk.

For example, assume an option writer sells a live hog put option at a $46 strike price, and receives a premium of $1.25 per cwt. This gives the buyer the right to sell the underlying futures contract at $46.00 per cwt. If the market should drop to $41.00 per cwt., the option writer would have to provide the $5 per cwt. difference through margin calls. The situation would be similar for writing a call option (granting the right to buy at a specified price). A sharply higher market would result in considerable cost to the writer, who guarantees the specified buying price.Writing a put or a call by itself is strictly a speculative venture.

When to Use Options

There may be a number of situations where livestock options can be used effectively in your marketing and price risk management program. Often, the comparison will need to be made between using options and either hedging or cash contracting. There are also ways to combine options with hedging or contracting in marketing strategies.

Consider using the options market:

- if you can't risk lower prices but feel there is a high probability the market will rise (for the livestock seller).
- if you can't risk higher prices but feel there is a probability the market will decline (for a livestock buyer).
- to insure a minimum selling price to protect your financial position.
- to increase pricing flexibility and the number of alternatives for price risk management.

After the fact, use of options will always come out as the "second-best" marketing alternative compared to either a cash sale or a futures market hedge. If the market goes up, you would have been better in a cash position and would have saved the premium cost. If the market goes down, you would have been better off with a straight hedge in the futures market because of the premium cost. But there's considerable difference between hindsight and foresight. Being second best is still better than being third best. Since you usually do not know for sure what the market will do, options can be a useful and profitable part of your livestock marketing strategy.

IV. MARKETING IS NOT A ONE PERSON JOB!

Livestock marketing involves several individuals, both within and outside the family. Whether marketing decisions are made by one person in the family or jointly, the results are felt by the whole family. Forward contracting and cash sales may involve ongoing dialogue with a local or packer buyer. Your lender may also want to know about your marketing plan and how the plan will help you meet your loan obligations. If you market through the futures or options markets, your lender may be willing to lend funds for margin requirements for hedging or for option premiums. You also need to work with a reliable broker. You might think of your marketing plan as an arrangement among you, the buyer, the lender and the broker, each with particular functions and responsibilities.

You are the one(s) to plan your marketing. Within the family, both spouses have to think about marketing plans that not only have good income potential but allow you to sleep at night. Following the step-by-step marketing described in Unit 13 will help you remove much of the guesswork and anxiety from forward pricing. If you rely on cash marketing or forward contracts, look for buyers that clearly spell out the terms of the contracts, the price premiums and discounts, and apply them fairly.

You are the one(s) to communicate your market plan to the lender and broker. With the lender, you can set levels of protection that are appropriate to meet your financial needs. Your lender has an interest in your continuing credit worthiness. If you use futures markets, explore arrangements with your lender for setting up a hedging account for a specified number of contracts. To make this work smoothly, the lender must know the status of market decisions. The lender will feel secure knowing a hedge or option is offsetting a downward cash market or that higher markets provide profit potential.

The broker you select should be hedge orientated rather than speculation oriented. You will have to decide to what extent you will rely on a broker for advice or strategy. You may use a broker only for order execution, for which there is a small brokerage fee. A larger fee would be charged for helping you with a market plan. If you are taking a market action on a small scale for the first time in order to gain confidence, your broker can help you do your homework before the trial run. Once you feel confident to take a long view of the market, orders can be left with the broker to execute when the market opportunities develop. The broker will furnish you with an accounting of your funds.

Whatever action you take in marketing, your decision will affect your family's financial position, cash flow and risk potential. Establishing good communications with livestock buyers is essential in optimizing cash sales. Working with your lender and broker can provide some checks and balances concerning your decisions.

V. SUMMARY

Livestock producers have numerous alternatives for marketing their product. The choice among alternatives depends largely on experience and understanding of cash and forward pricing alternatives, the potential return from each, and the risks involved. Optimizing income from marketing helps the family meet its family and farm business goals.

Livestock markets tend to follow seasonal and cyclical patterns. Awareness of the seasonal patterns which are likely to recur year after year influence price expectations. As inventories and prices of both cattle and hogs increase or decrease, the demand and supply cycles are evident. Herds are expanded or contracted in response to prices, and price is

driven by those shortages or surpluses coming onto the market as the animals reach market weights. In addition to affecting timing of sales, cyclical and seasonal patterns can affect decisions on the weights at which animals are marketed. Cooperative Extension, among other sources, publishes price changes by two week intervals and seasonal price indexes for various classes of hogs and cattle. Such data are useful in anticipating price levels throughout the year.

You have two broad choices for marketing livestock: the cash market or forward pricing. The cash market is the most widely used marketing alternative for both hogs and cattle. Forward cash contracts, hedging on the futures market and options trading increase the ability of producers to identify a return as well as to reduce market risks.

Selling livestock on the cash market, whether by live or carcass weight, works well when prices are stable and when marketing can be concentrated into favorable price periods. However, predicting prices may be difficult with volatile markets and you risk not covering your costs of production.

Forward contracting gives you the opportunity to take advantage of good prices when they are available, even though your livestock are not ready for market. A forward contract designates the weight and grade of livestock you are to deliver to a certain location at a certain price. The local buyer who offers such contracts is actually trading on the futures market for you. While you have the advantage of known prices and opportunities for premiums, there is little standardization of contracts, so alternatives are difficult to compare. Livestock not meeting specifications may be discounted, delivery periods may be restrictive, and delivery shortfalls may be penalized.

You may also forward price livestock on the futures market. You may hedge against declining prices by taking a short position, that is, selling a futures contract before you have livestock ready to market. Instead of delivering on the futures contract, it is usually bought back. So even if prices decline, there is offsetting profit from the futures contract.

Another tool for protecting price and reducing market risk is an options contracts. You buy the right, but not the obligation, to buy or sell a fixed amount of a livestock commodity before a specific date at a specific price. You pay only a premium fee, along with transaction costs, for the right to exercise the option, giving you flexibility to respond to changing prices. Two commonly used strategies in options trading are: buying a put option to place a floor on selling price while maintaining the potential to gain by selling at a higher price; and, buying a call to place a ceiling on purchase price by while maintaining the possibility of a gain from falling prices.

Your family and your business will benefit or suffer from your marketing decisions. Family members, buyers, lenders, and brokers all fit into the marketing picture. Improving your understanding of livestock marketing alternatives gives you an edge on reducing risk and increasing returns.

VI. SUGGESTED REFERENCES ON LIVESTOCK MARKETING

A. Cooperative Extension Service, Iowa State University:

Forward Pricing of Livestock (Pamphlet Series)
Pm-1075a Forward Pricing Livestock
Pm-1075b Forward Contracting vs. Hedging of Livestock

Pm-1075a Forward Pricing Livestock
Pm-1075b Forward Contracting vs. Hedging of Livestock
Pm-1075c Selecting a Hog Forward Contract
Pm-1075d Understanding Livestock Basis
Pm-1075e Hedging Livestock
Pm-1075f Basis for Live Hogs
Pm-1075g Basis for Choice Steers
Pm-1075h Delivering on a Hog Futures Contract
Pm-1075i Delivering on a Live Beef Futures Contract

Live Cattle Basis -- Choice Steers, Interior Iowa. M-1250
Live Hog Basis -- Interior Iowa. M-1249
Analysis of Cattle Feeding Returns. M-1237
Analysis of Iowa Hog Enterprise Returns. M-1236
Hog Price Changes by Two-Week Periods. M-1238
Cattle Price Changes by Two-Week Periods. M-1239
Using the Hog Options Market. M-1244
Grade and Yield Marketing for Hogs. PM-1309

Home Study Course on Hog Marketing. M-1240a to M-1240i
Introduction
Developing a Marketing Plan
Seasonal and Cyclical Patterns
Overview of Pricing Alternatives
Forward Cash Contracting
Hedging Hogs with Futures Contracts - I
Hedging with Live Hog Futures - II
Using the Hog Options Market
Hog Market Analysis and Forecasting

B. North Central Regional Extension Producer Marketing Management
Publication No.217
Primer on Agricultural Options, Fact Sheet #1
Understanding and Using Basis for Livestock, Fact Sheet #5
Delivering on a Live Cattle Futures Contract, Fact Sheet #6
Seasonality of Cattle Prices, Fact Sheet #10
Seasonality of Hog Prices, Fact Sheet #11
Selecting a Commodity Broker, Fact Sheet #13

C. Chicago Mercantile Exchange Publications. 30 Wacker Drive, Chicago, Illinois 60606
An Introduction to Livestock Options
Livestock Futures and Options: Contract Terms
How to Make Livestock Futures Work for You
A Self-Study Guide for Hedging with Livestock Futures
Livestock Hedgers Workbook

VII. APPENDIX

Live Hogs Contract Specifications[1]

Commodity Specifications	U.S.D.A. #1, 2, and 3's, barrows and gilts.
Par Delivery Units	30,000 pounds; barrows and gilts averaging between 210 and 240 pounds. At least 90 hogs must fall in this range. Hogs under 200 or over 250 pounds are not deliverable.
Contract Months	February, April, June, July, August, October and December.
Contract Termination	20th calendar business day of contract month or if the 20th is not a business day, the last business day immediately preceding the 20th.
Delivery Days	Monday, Tuesday, Wednesday or Thursday of contract month, except holidays and one day preceding holidays.
Delivery Points	Peoria at par; Omaha, East St. Louis and Sioux City at 25¢ per cwt discount; Kansas City, St. Joseph and Sioux Falls at 50¢/cwt; and St. Paul at 75¢/cwt. discount.

Chicago Mercantile Exchange Approved Delivery Points for Live Hogs
Shaded States: 83% of Total U. S. 1981 Production.

[1]Source: A Self-Study Guide for Hedging with Livestock Futures. Chicago Mercantile Exchange. 22-24.

Live Cattle Contract Specifications[1]

Commodity Specifications	Slaughter steers, choice quality, yield grades 1, 2, 3, and 4.
Par Delivery Units	40,000 pounds; of slaughter steers averaging 1,050 to 1,200 pounds per animal. Not more than four head of estimated yield grade 4 choice steers are permitted. Individual animals weighing less than 950 or more than 1,300 pounds are not deliverable. Steers averaging 1,050 to 1,125.5 pounds shall have an estimated hot yield of 62%. Steers averaging 1,125.6 to 1,200 pounds shall have an estimated hot yield of 63%.
Contract Months	February, April, June, August, October, and December.
Contract Termination	20th calender business day of contract month or if the 20th is not a business day, the last business day immediately preceding the 20th.
Delivery Days	Any business day of the contract month except on a day preceding a holiday.
Delivery Points	Sioux City, Omaha, Peoria, Joliet, Greeley, Dodge City and Amarillo at par.

Chicago Mercantile Exchange Approved Delivery Points for Live Cattle
Shaded area 84% of U. S. Cattle and Calves on Feed (12 Top States)

[1]Source: A Self-Study Guide for Hedging with Livestock Futures. Chicago Mercantile Exchange. 22-24.

Hedging Problem

Objective: The purpose of this exercise is to develop working knowledge of computing a hedge transaction.

Cy and Cybill Clone have 300 hogs that will be ready to sell in May and 300 more to sell in June. They are considering hedging the hogs to obtain price protection in case the hog market weakens.

The June futures price on the Chicago Mercantile Exchange in January is quoted at $46.00 per cwt. Since there is no May contract, they have to use the June futures to hedge the hogs to sell in May.

Cy and Cybill estimate that the May basis for the June contract will be $4.50 per cwt. and the June basis will be $3.50 per cwt. Their broker estimates the total trading cost, including brokerage fees and interest on margin, to be 35 cents per cwt. Their broker also notes that a Chicago Mercantile Exchange contract is 30,000 pounds and a Mid-America contract is 15,000 pounds.

Cy and Cybill estimate the average hog marketing weight to be 240 pounds.

A. What would the Clone's estimated return be if they could hedge all of the hogs?

	May hedged hogs	June hedged hogs
Futures price	_____ per cwt.	_____ per cwt.
Less basis	_____ per cwt.	_____ per cwt.
Less trading cost	_____ per cwt.	_____ per cwt.
Net hedge price	_____ per cwt.	_____ per cwt.

B. Total May return = (72,000 pounds) x (net May hedge price _____) $_____

C. Total June return = (72,000 pounds) x (net June hedge price _____) $_____

D. Total gross estimated return for both months $_____

E. How many Chicago Mercantile contracts could the Clones use and not exceed the number of pounds of live pork to be delivered?

for May? _____ for June? _____

F. How many pounds in each month would not be sold for the net hedge price? _____

The Cy and Cybill storied continues...

The Clones sold four Chicago Mercantile June futures contracts in January for $46.00 per cwt.

Cy and Cybill lifted two June contracts in May and sold 300 hogs on the cash market. The May price of the June futures was $44.00 and the cash price was $41.00.

They lifted two June contracts in June and sold 300 hogs on the cash market. The June futures price was $48.50 and the cash price was $45.00

The trading cost was 35 cents per cwt. for each contract.

What would be the Clones' total return?

	Sale Month	
	May	**June**
A. Sold June futures	_____ per cwt.	_____ per cwt.
B. Minus Bought June futures	_____ per cwt.	_____ per cwt.
C. Equals **Profit (or loss) on futures**	_____ per cwt.	_____ per cwt.
D. Plus cash price	_____ per cwt.	_____ per cwt.
E. Equals **hedged price**	_____ per cwt.	_____ per cwt.
F. Minus trading cost	_____ per cwt.	_____ per cwt.
G. Equals **net hedged price**	_____ per cwt.	_____ per cwt.
H. Times hundred weight contracted	_____ cwt.	_____ cwt.
I. Equals **total hedge return**	$_____	$_____
J. Total hundred weight sold (cash)	_____ cwt.	_____ cwt.
K. Minus hundred weight contracted	_____ cwt.	_____ cwt.
L. Equals unhedged weight	_____ cwt.	_____ cwt.
M. Times cash price	____ __ per cwt.	_____ per cwt.
N. Equals **total unhedged return**	$_____	$_____

Summary of hedging problem

A. What basis did the Clones expect in May? $_____ In June? $_____ per cwt.

B. What was the realized basis in May? $_____ In June? $_____ per cwt.

C. What net hedged price did they expect for their May hogs? $_____ per cwt.

D. What net hedged price did they expect for their June hogs? $_____ per cwt.

E. What was the realized net hedge price for their May hogs? $_____ per cwt.

F. What was the realized net hedge price for their June hogs? $_____ per cwt.

G. Explain why their realized price was the same or different from the expected price.

H. What was Cy and Cybill's total return from the 600 hogs? $_____

I. What would their return have been if they had not hedged? $_____

J. What did the Clones gain by hedging?

K. When might this strategy of hedging be useful to you?

Options Problem

Objective: To become familiar with forward pricing strategies using options on futures contracts and to evaluate the use of such strategies in your own marketing.

1. Setting a Floor on Price

Cy and Cybill anticipate marketing hogs in the first half of March. The April put option with a strike price of $45 can be purchased at a premium of $2.50 per cwt. The expected basis, cash below futures, is $1.85 per cwt. and transaction costs are estimated at $.20 per cwt. The April futures is being traded at $45.75.

A. What is the estimated minimum selling price?

B. What is the time value portion of the premium?_____

C. What is the intrinsic value portion of the premium?_____

D. What is the expected local cash price based on the futures price?_____

E. Compare the minimum selling and expected local cash prices._____

F. If the put option is purchased, what would be the outcome if the April futures contract rose to $49.00 and the $1.85 basis was realized?

G. What would be the outcome if the April futures contract fell to $41.75 and the $1.85 basis was realized?

H. Under what conditions might you find setting a floor price by purchasing put options a forward pricing alternative in your operation?

2. Setting a Ceiling on Price

For the yearling feeder calves to be purchased in early November, Bryan and Brenda calculated desired returns and determined they could not pay more than $84.00 per cwt. to cover all costs of finishing.

A. Calculate the maximum buying price for each strike price below.

March Feeder Cattle

Strike Price	Expected Premium	Transaction Cost	Expected Basis	Price
86	.30	.20	-1.20	$_____
84	.80	.20	-1.20	$_____
82	1.10	.20	-1.20	$_____
80	2.40	.20	-1.20	$_____
78	3.70	.20	-1.20	$_____

B. What strike price(s) could Bryan and Brenda use?

C. What is the decrease in maximum price by jumping down to the lowest strike price?

D. How much will the premium increase by going to the lowest strike price?

E. If Bryan and Brenda determined they could afford to pay up to $86.50 per cwt. and still cover all variable costs of finishing, what additional strike price(s) could be considered?

F. When would setting a ceiling on price be a useful marketing tool for you?

3. Fencing a Price

Assume cattle prices have been volatile. Roger and Karen feel the market price will decline between now and the time their cattle will be marketed. They think there's only a slight possibility of the price moving up. With these conditions, they decide to reduce the put premium cost by writing an out-of-the-money call option. By purchasing the put and writing a call, they establish upper and lower selling price boundaries. The current December cattle futures is $70 per cwt. Roger and Karen purchase a $66 December put for $1.40 and write a $74 call, receiving $.20. The expected basis is $1.60 and costs incurred are $.20 per cwt for each transaction.

A. What is the minimum fence selling price (the bottom of the fence)?

B. What is the maximum fence selling price (top of the fence)?

C. What happens if futures rise to $77 per cwt.?

D. What happens if futures fall to $62 per cwt.?

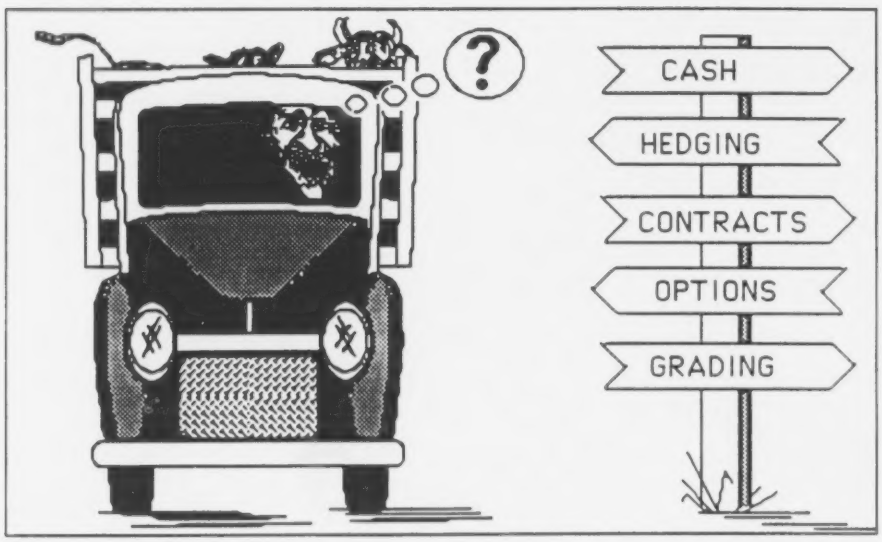
E. When might this strategy of fencing a price be useful to you?

LIVESTOCK MARKETING

OBJECTIVES:

At the completion of this section, each farm family will:

1. be able to use livestock seasonal and cyclical patterns to increase their ability to forecast prices of livestock, understand price trends and improve their marketing decisions,
2. better understand the uses of cash sales, forward contracting, hedging and options,
3. compare livestock marketing tools for pricing and risk management, and
4. be able to select and use appropiate marketing tools for their own livestock marketing situations.



Prepared by Gene Futrell, Extension Economist; Mary M. de Baca, Assistant Professor, Family Environment; Mark Zidon, Graduate Student, Agricultural Education; Craig Chase, Extension Associate; William Edwards, Extension Economist, and Cynthia Needles Fletcher, Extension Specialist, Family Environment.

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and justice for all
The Iowa Cooperative Extension Service's programs and policies are consistent with pertinent federal and state laws and regulations on nondiscrimination regarding race, color, national origin, religion, sex, age, and handicap.

INTEREST APPROACH

Ask a volunteer, preferably a conservative person, and label this individual "farmer." Collect a ten dollar bill from this person.

A flip of a coin and roll of a die will determine the increased or decreased value of the bill. Heads--the price increases, tails--the price decreases. The dollar amount of increase or decrease will determined by rolling the die. For example, tails on the coin and a four on the die means the value of the bill will drop $4.00, in which case you will return $6.00 to the volunteer.

Inform the volunteer of the options available. The bill owner can (a) assume the risk of a change in the cash price of the bill or (b) pay any other willing participant (or instructor) fifty cents to assume the risk of a price change.

After making decisions, flipping the coin, and rolling the die, briefly discuss the events. Was the person willing to gamble on the cash market? Did he or she prefer to shift the risk to a speculator? Were the costs of shifting the risk small enough to make it worth while? Return the bill to the owner at the end of the demonstration!

TEACHING OUTLINE

The times suggested are to provide an overview of livestock marketing at a single meeting. If you prefer a more in-depth study of livestock marketing alternatives, two meetings with speakers and/or additional activities could be scheduled.

Materials Needed	Approximate Time (Min)	Teaching Guides	Reference Page
		Livestock Marketing	
TM 11-1 TM 11-2	5	Provide an overview of Unit 11 with objectives --what will each participant learn about livestock marketing.	11-3
TM 11-3		Preview content of the unit including forecasting and marketing tools.	
TM 11-4 to TM 11-6	10	Illustrate and discuss hog and cattle production and price cycles.	11-3 to 11-6
TM 11-7 to TM 11-9	5	Discuss effect of seasonal price patterns in marketing decisions for hogs and cattle.	11-7 to 11-15
TM 11-10	10	Identify marketing tools available and discuss reasons for the widespread use of some more than others.	11-15
TM 11-11 and TM 11-12	10	Discuss various forms of cash sales and the advantages and disadvantages of each.	11-16 to 11-20

Materials Needed	Approximate Time (Min)	Teaching Guides	Reference Page
TM 11-13 and TM 11-14	10	Identify features of contracting; advantages and disadvantages of using this forward pricing tool.	11-21 and 11-22
TM 11-15 to TM 11-17	10	Discuss the use of hedging hog and cattle contracts on the futures market.	11-23 and 11-24
TM 11-18 to TM 11-20	5	Relate how expected basis is a consideration in marketing calculations.	11-27 and 11-30 and 11-31
TM 11-21 and TM 11-22 EX 11-1	15	Go through hedging examples and exercises, calculating net profit under different market conditions.	11-25 to 11-27
TM 11-23 and TM 11-24	5	Describe options contracts as a forward pricing alternative.	11-32 and appendix
TM 11-25 to TM 11-29	5	Illustrate elements of options and how each is determined.	11-32 to 11-35
TM 11-30 to TM 11-32	5	Emphasize the opportunity to make choices in options trading to reduce risk and lock in returns.	11-35
TM 11-33 to TM 11-35 EX 11-2	15	Work through options strategies and discuss usefulness to your own pricing decisions.	11-36 to 11-43
	5	Sort out all those who are or should be involved in your livestock marketing.	11-44
TM 11-36	5	Review options and how they work.	
TM 11-37		Summarize the effect of seasonal and cyclical patterns on marketing and the tools available to optimize profits and reduce risks.	11-44 and 45
		Refer to other sources of livestock marketing information.	11-45

OPTIONAL ACTIVITIES

Invite a livestock buyer, broker, and/or farm couple to talk about livestock marketing.

A. A livestock buyer who buys and sells on grade and yield could be invited to explain that system. A buyer who offers forward contracts could be invited to explain premiums, discounts, and other contract terms. Suggest that buyers bring copies of grade and yield information or contracts for participants to study.

B. Invite a broker to address the participants on the topics of hedging and using options. Provide the questions on the following page to the presentor to assist in preparation. Stress to the broker that the participants are interested in a producer's viewpoint rather than that of a speculator.

Presentation to FFM Participants by a commodities market broker.

Objective: To inform farm couples of the procedures in hedging their livestock with a futures contract or by using options.

Guide questions: The following questions are suggested to assist the broker in preparing for the needs of the participants. Carefully plan with the broker the extent to which each question needs addressing or others added.

Briefly review how the **hedging** works.

Briefly review the difference between hedging and speculating.

What are the costs involved in hedging? Commission? Margin? Interest on margin?

Margin calls?

What are the risks involved in hedging?

How do these risks compare to simply selling on the cash market?

What are the procedures for hedging livestock?

Who should be contacted?

What forms need to be filled out?

How often should the broker be contacted?

What precautions should be taken?

Once a hedge has been placed, what choices does a farm couple have?

Briefly review what **options** are.

What are the costs associated with using options?

What are a farm couples' choices in using options to sell their livestock?

...when they decide to price their livestock?

...during the process?

...when they finally sell their livestock?

What are the procedures for using options?

Who should be contacted?

What forms need to be filled out?

How often should the broker be contacted?

What precautions should be taken?

C. Invite a farm couple that has used options and/or hedging. Provide the questions below to use for preparing the presentation.

Presentation to FFM Participants by a farm couple.

Objective: To discuss procedures and risks in hedging their livestock with a futures contract or by using options.

Guide questions: The following questions are suggested to assist the presentors in preparing to talk with the participants. Carefully plan with the presentors the extent to which each question needs addressing or others added.

Describe your livestock operation.

Briefly outline your marketing plan.

What factors did you consider when you decided to use futures or options?

What factors did you consider when you selected a broker?

What risks did you feel when you first began to use futures contracts or options?

What sources of information do you use to assist you in pricing your livestock?

What roles do family members play in the decision-making process associated with hedging?

What plans and stratagies do you use in deciding when to hedge or use options?

What records do you keep to assist you in the marketing process?

What incidents can you share when you were glad to have hedged or used options?

What incidents can you share when you wished you had not hedged or used options?

What costs do you incur in the process of hedging or using options?

How do you finance the costs incurred?

ON-FARM ACTIVITIES AND EVALUATION

The assessment on the following page was designed to give the facilitator a format of discussion with the participants at an on-farm or office visit. Through the assessment the couple will identify present and planned levels of involvement in marketing alternatives. Together, facilitator and participants can formulate suggestions for improving skills in the area of livestock marketing.

Objective: To assess your present livestock marketing practices and goals.

Respond to the following questions by checking the appropriate lines indicating your present situation and future goals. Use this scale: **1 = never to rarely, 2 = occasionally, 3 = usually to always**.

1. To what extent do you...	Presently 1	2	3	Goal 1	2	3
a. keep up with livestock inventory trends?	___	___	___	___	___	___
b. consider number of animals slaughtered to forecast prices?	___	___	___	___	___	___
c. keep records of current prices?	___	___	___	___	___	___
d. use forecasting information to price your livestock?	___	___	___	___	___	___
2. To what extent do you use each method of marketing your livestock?						
a. cash marketing	___	___	___	___	___	___
b. forward contracting	___	___	___	___	___	___
c. hedging with futures	___	___	___	___	___	___
d. buying or selling options on futures contracts	___	___	___	___	___	___
3. To what extent do you...						
a. keep records of production costs?	___	___	___	___	___	___
b. calculate breakeven prices?	___	___	___	___	___	___
c. consider variable and fixed costs plus family living needs to establish target prices?	___	___	___	___	___	___
d. consider marketing alternatives to meet or exceed your target price?	___	___	___	___	___	___

Evaluate your skill and understanding of the following. Use this scale for your presentation situation: **1 = little skill and understanding, 2 = some skill and understanding, and 3 = much skill and understanding**. Considering your goals, check "same" if you are satisfied with your current understanding or "more" if you desire to improve your skill and understanding.

1. Your ability to calculate costs and returns of...	Presently 1	2	3	Goal same	more
a. cash marketing?	___	___	___	___	___
b. forward contracting?	___	___	___	___	___
c. hedging with futures?	___	___	___	___	___
d. buying or selling options on futures contracts?	___	___	___	___	___
2. The risks associated with marketing by...					
a. cash marketing?	___	___	___	___	___
b. forward contracting?	___	___	___	___	___
c. hedging with futures?	___	___	___	___	___
d. buying or selling options on futures contracts?	___	___	___	___	___

Answer sheet for Exercise 11-1 on pages 11-49 to 11-57

EX 11-1

Hedging Problem

Objective: The purpose of this exercise is to develop working knowledge of computing a hedge transaction.

Cy and Cybill Clone have 300 hogs that will be ready to sell in May and 300 more to sell in June. They are considering hedging the hogs to obtain price protection in case the hog market weakens.

The June futures price on the Chicago Mercantile Exchange in January is quoted at $46.00 per cwt. Since there is no May contract, they have to use the June futures to hedge the hogs to sell in May.

Cy and Cybill estimate that the May basis for the June contract will be $4.50 per cwt. and the June basis will be $3.50 per cwt. Their broker estimates the total trading cost, including brokerage fees and interest on margin, to be 35 cents per cwt. Their broker also notes that a Chicago Mercantile Exchange contract is 30,000 pounds and a Mid-America contract is 15,000 pounds.

Cy and Cybill estimate the average hog marketing weight to be 240 pounds.

A. What would the Clone's estimated return be if they could hedge all of the hogs?

	May hedged hogs	June hedged hogs
Futures price	$ 46.00 per cwt.	$ 46.00 per cwt.
Less basis	4.50 per cwt.	3.50 per cwt.
Less trading cost	.35 per cwt.	.35 per cwt.
Net hedge price	41.15 per cwt.	42.15 per cwt.

B. Total May return = (72,000 pounds) x (net May hedge price .4115) $ 29,628

C. Total June return = (72,000 pounds) x (net June hedge price .4215) $ 30,348

"

D. Total gross estimated return for both months $ 59,976

E. How many Chicago Mercantile contracts could the Clones use and not exceed the number of pounds of live pork to be delivered?

for May? 2 for June? 2

F. How many pounds in each month would not be sold for the net hedge price? 120 cwt or 12,000 pounds

The Cy and Cybill storied continues...

The Clones sold four Chicago Mercantile June futures contracts in January for $46.00 per cwt.

Cy and Cybill lifted two June contracts in May and sold 300 hogs on the cash market. The May price of the June futures was $44.00 and the cash price was $41.00.

They lifted two June contracts in June and sold 300 hogs on the cash market. The June futures price was $48.50 and the cash price was $45.00

The trading cost was 35 cents per cwt. for each contract.

What would be the Clones' total return?

	Sale Month	
	May	**June**
A. Sold June futures (in January)	46.00 per cwt.	46.00 per cwt.
B. Minus Bought June futures (bought back)	44.00 per cwt.	48.50 per cwt.
C. Equals **Profit (or loss) on futures**	2.00 per cwt.	(2.50) per cwt.
D. Plus cash price	41.00 per cwt.	45.00 per cwt.
E. Equals **hedged price**	43.00 per cwt.	42.50 per cwt.
F. Minus trading cost	.35 per cwt.	.35 per cwt.
G. Equals **net hedged price**	42.65 per cwt.	42.15 per cwt.
H. Times hundred weight contracted	600 cwt.	600 cwt.
I. Equals **total hedge return**	$25,590	$ 25,290
J. Total hundred weight sold (cash) 300 x 240 = 72,000	720 cwt.	720 cwt.
K. Minus hundred weight contracted	600 cwt.	600 cwt.
L. Equals unhedged weight	120 cwt.	120 cwt.
M. Times cash price	41.00 per cwt.	45.00 per cwt.
N. Equals **total unhedged return**	$ 4,920	$ 5,400

Summary of hedging problem

A. What basis did the Clones expect in May? $ 4.50 In June? $ 3.50 per cwt.

B. What was the realized basis in May? $ 3.00 In June? $ 3.50 per cwt.

C. What net hedged price did they expect for their May hogs? $ 41.15 per cwt.

D. What net hedged price did they expect for their June hogs? $ 42.15 per cwt.

E. What was the realized net hedge price for their May hogs? $ 42.65 per cwt.

F. What was the realized net hedge price for their June hogs? $ 42.15 per cwt.

G. Explain why their realized price was the same or different from the expected price.

In May, the net hedge price was higher than the expected price because the realized basis was lower than expected.
In June, the hedge price was the same as expected ($42.15) because the realized basis was the same as the expected basis ($3.00).

H. What was Cy and Cybill's total return from the 600 hogs? $ 61,200

May $25,590 + 4,920 + June $25,290 + $5,400

I. What would their return have been if they had not hedged? $ 61,920

May cash price $41.00 × 720 cwt = $29,520

June cash price $45.00 × 720 cwt = 32,400

J. What did the Clones gain by hedging?

Even though the return was less by having hedged it as would have resulted from cash sales, Cy + Cybill "hedged against the risk of lower cash prices at the time of sale. They felt more secure during the months, from January to June, knowing a target price could be attained

K. When might this strategy of hedging be useful to you?

Suggested answers for EX 11-2 pages 11-52 to 11-54

EX 11-2

Options Problem

Objective: To become familiar with forward pricing strategies using options on futures contracts and to evaluate the use of such strategies in your own marketing.

1. Setting a Floor on Price

Cy and Cybill anticipate marketing hogs in the first half of March. The April put option with a strike price of $45 can be purchased at a premium of $2.50 per cwt. The expected basis, cash below futures, is $1.85 per cwt. and transaction costs are estimated at $.20 per cwt. The April futures is being traded at $45.75.

A. What is the estimated minimum selling price?

April hogs	$45.00
Less: premium	2.50
expected basis	1.85
transaction costs	.20
Estimated minimum	40.45

B. What is the time value portion of the premium? $2.50 see pp 11-34, 11-35

C. What is the intrinsic value portion of the premium? .00 see pp 11-34, 11-35

D. What is the expected local cash price based on the futures price? $43.90

Current April futures	$45.75
Less: Expected basis	1.85
Expected local cash price	43.90

E. Compare the minimum selling and expected local cash prices. $3.45 difference

① Expected local price	$43.90	② Premium	$2.50
Minimum selling price	40.45	Difference between strike & futures	.75
	3.45	Transaction cost	.20
			3.45

F. If the put option is purchased, what would be the outcome if the April futures contract rose to $49.00 and the $1.85 basis was realized?

April hog futures	$49.00
Less: expected basis	1.85
Local cash price	47.15
Less: premium	2.50
transaction cost	.20
Realized selling price	44.45

G. What would be the outcome if the April futures contract fell to $41.75 and the $1.85 basis was realized?

April hog futures	$41.75
Less: expected basis	1.85
Local cash price	39.90
Option gain from exercise	3.35
Less: premium	2.50
transaction cost	.20
net option gain	.35
Realized selling price	40.45

H. Under what conditions might you find setting a floor price by purchasing put options a forward pricing alternative in your operation?

2. Setting a Ceiling on Price

For the yearling feeder calves to be purchased in early November, Bryan and Brenda calculated desired returns and determined they could not pay more than $84.00 per cwt. to cover all costs of finishing.

A. Calculate the maximum buying price for each strike price below.

March Feeder Cattle

Strike Price		Expected Premium		Transaction Cost		Expected Basis	Price
86	+	.30	+	.20	-	-1.20	$ 87.70
84	+	.80	+	.20	-	-1.20	$ 86.20
82	+	1.10	+	.20	-	-1.20	$ 84.50
80	+	2.40	+	.20	-	-1.20	$ 83.80
78	+	3.70	+	.20	-	-1.20	$ 83.10

B. What strike price(s) could Bryan and Brenda use?

strike price @ 80 = $83.80
" @ 78 = 83.10

C. What is the decrease in maximum price by jumping down to the lowest strike price?

strike price @ 80 = $83.80
@ 78 = 83.10
.70

D. How much will the premium increase by going to the lowest strike price?

strike price @ 78 . $3.70 premium cost
80 . 2.40 "
1.30 difference

E. If Bryan and Brenda determined they could afford to pay up to $86.50 per cwt. and still cover all variable costs of finishing, what additional strike price(s) could be considered?

strike price @ 84 . 86.20
@ 82 . 84.50

F. When would setting a ceiling on price be a useful marketing tool for you?

3. Fencing a Price

Assume cattle prices have been volatile. Roger and Karen feel the market price will decline between now and the time their cattle will be marketed. They think there's only a slight possibility of the price moving up. With these conditions, they decide to reduce the put premium cost by writing an out-of-the-money call option. By purchasing the put and writing a call, they establish upper and lower selling price boundaries. The current December cattle futures is $70 per cwt. Roger and Karen purchase a $66 December put for $1.40 and write a $74 call, receiving $.20. The expected basis is $1.60 and transaction costs incurred are $.20 per cwt.

A. What is the minimum fence selling price (the bottom of the fence)?

December put option	$ 66.00
Less: put premium	1.40
expected basis	1.60
transaction costs (2)	.40
Plus: call premium	.20
Minimum fence selling price	62.80

B. What is the maximum fence selling price (top of the fence)?

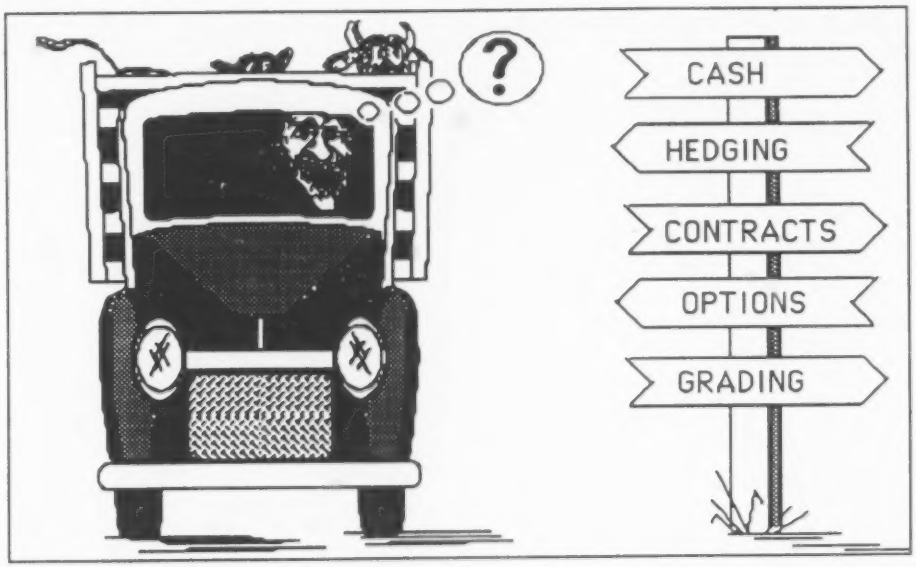
December call option	$ 74.00
Less: put premium	1.40
expected basis	1.60
transaction costs (2)	.40
Plus: call premium	.20
Maximum fence selling price	$ 70.80

C. What happens if futures rise to $77 per cwt.?

D. What happens if futures fall to $62 per cwt.?

	C. at $ 77.	D. at $ 62
Futures price	$ 77.00	$ 62.00
Futures price granted (call)	74.00	66.00
Loss or gain in futures	(3.00)	4.00
Premium received (call)	.20	.20
Premium cost (put)	-1.40	-1.40
Transaction costs (2)	- .40	- .40
Net options transaction	(4.60)	2.40
Local cash price	75.40	60.40
Realized cash price	70.80	62.80
Futures price	77.00	62.00
Less: expected basis	1.60	1.60
Local cash price	75.40	60.40

E. When might this strategy of fencing a price be useful to you?



LIVESTOCK MARKETING

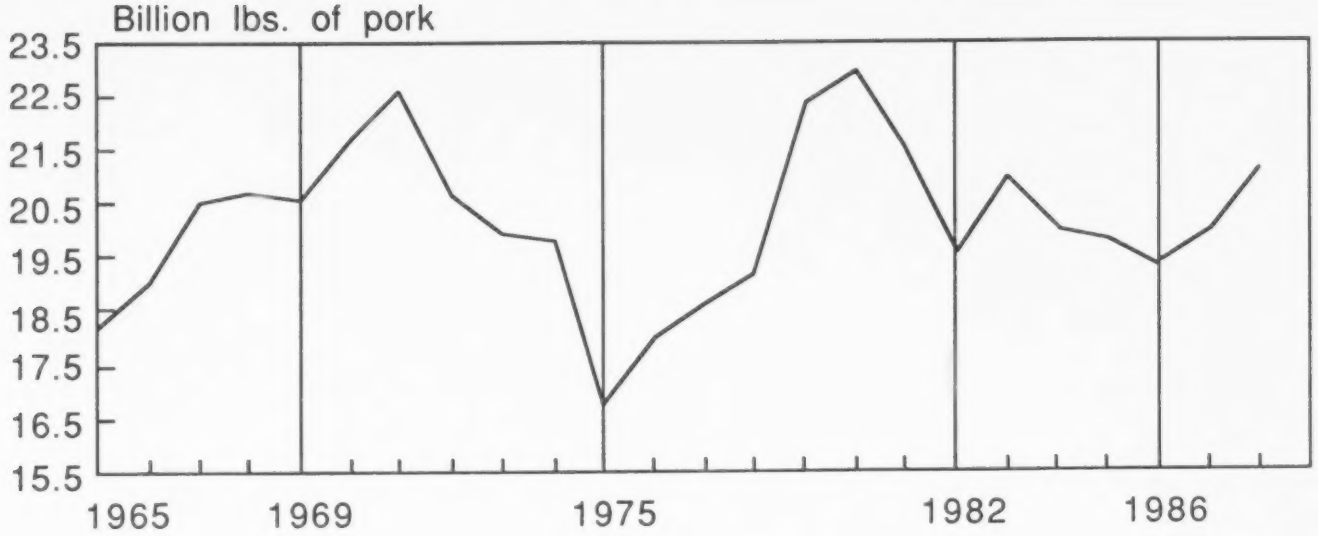
Livestock Marketing

In this unit you can:

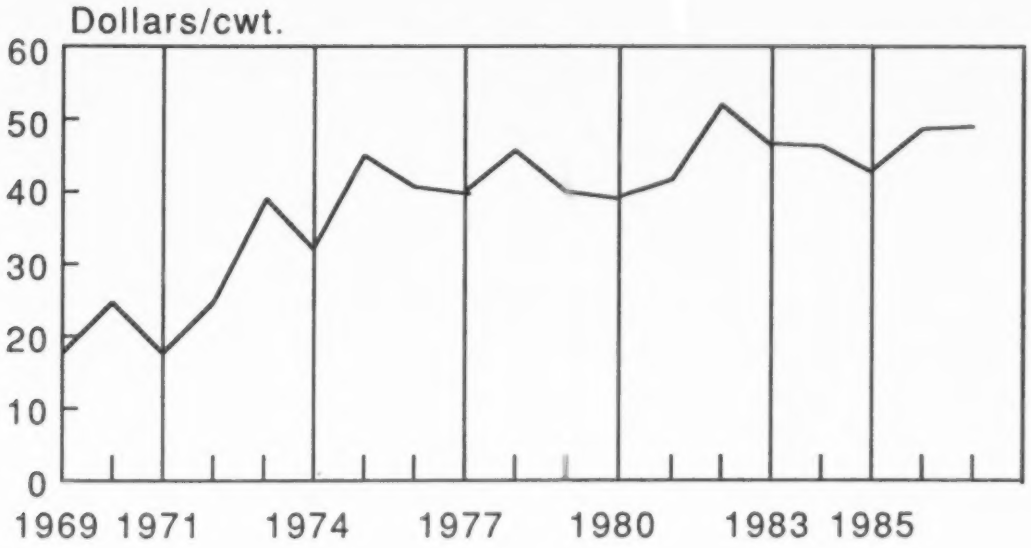
- ❑ improve price forecasting ability
- ❑ better understand livestock marketing tools
- ❑ compare marketing alternatives
- ❑ apply these skills to your livestock marketing

Livestock marketing includes:

- Cyclical production and price patterns
- Seasonal production and price patterns
- Cash sales
- Forward contracts
- Hedging
- Options
- Buyers, brokers, and lenders

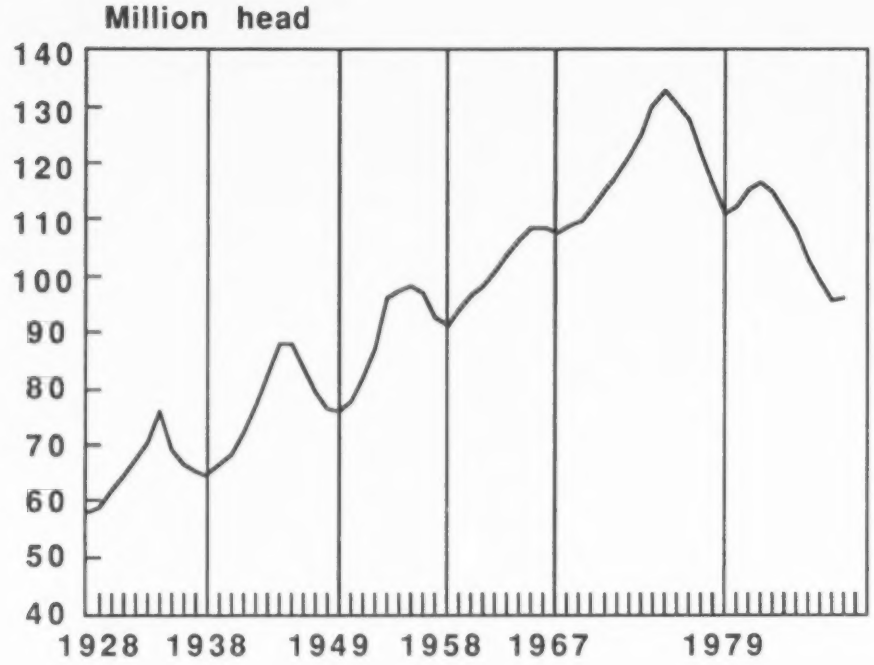


Hog production cycles result from expansion and cutback by producers.



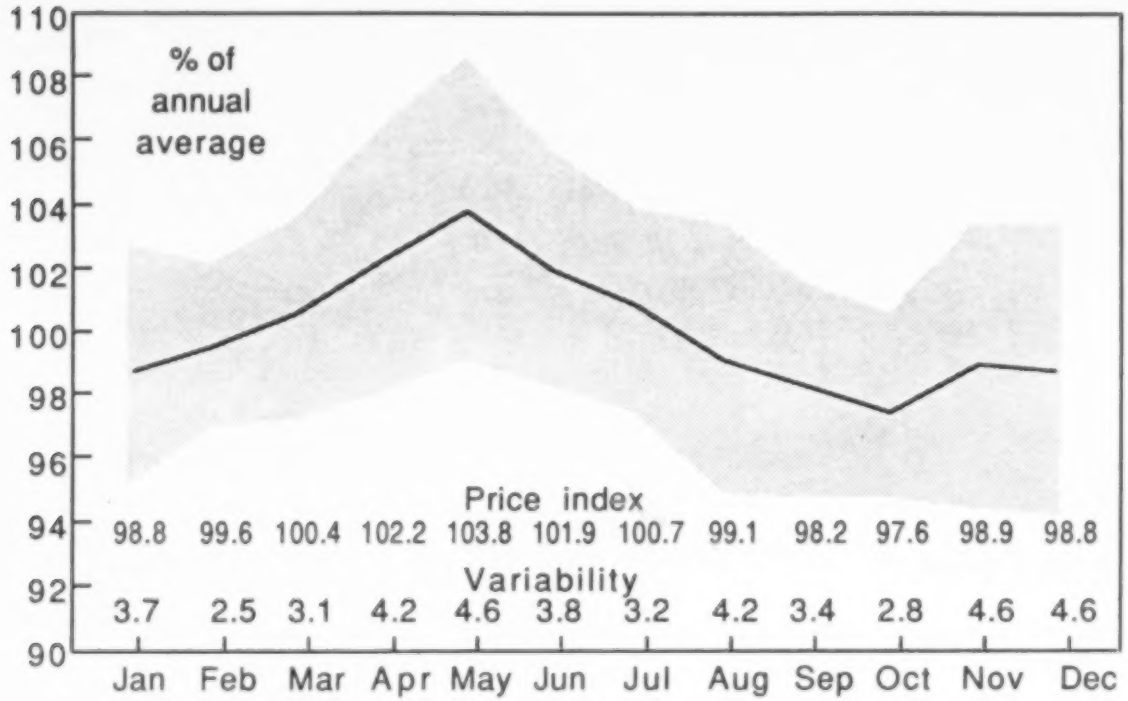
Hog prices cycle as a response to supply and demand

Farm and Family Management



Cattle inventory cycles typically have been from 9 to 14 years long

PRICE VARIABILITY FOR CHOICE 1100-1300 lb. STEERS 1979-1988, IOWA



Seasonal prices for livestock are somewhat predictable

Farm and Family Management

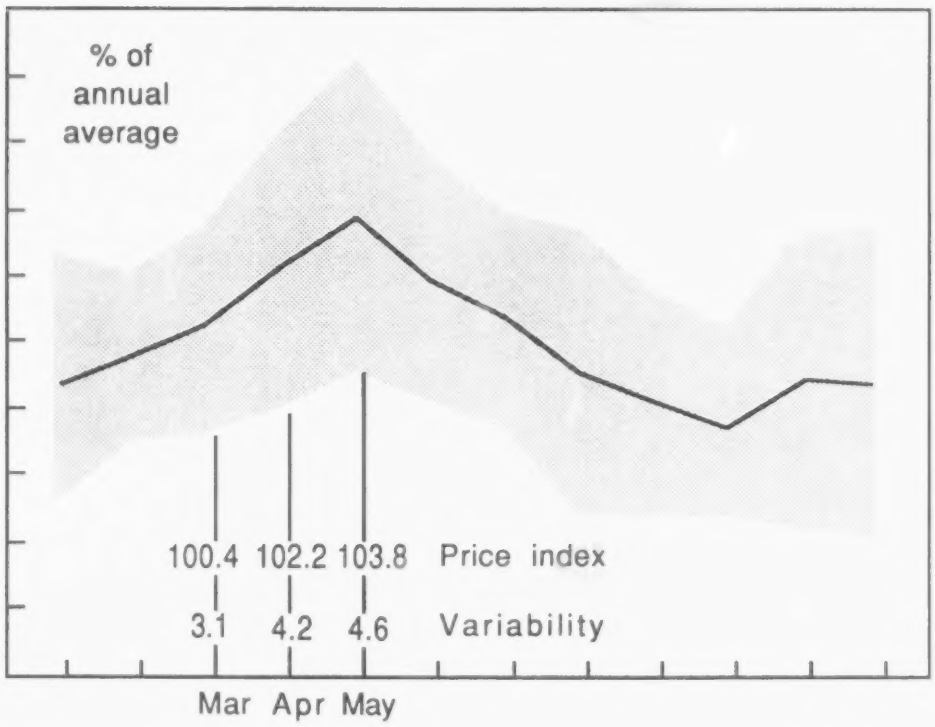
Cattle Price Changes by Two-Week Periods (1979-1988)

Two Week Period	No. of Years Increased	Average % Price Increase	No. of Years Decreased	Average % Price Decrease
Mar - 1st two weeks				
	6	1.74	4	1.67
Mar - 2nd two weeks				
	7	1.76	3	1.62
Apr - 1st two weeks				
	6	2.62	4	1.28
Apr - 2nd two weeks				
	6	1.41	4	1.10
May - 1st two weeks				
	5	1.18	5	1.07
May - 2nd two weeks				
	2	0.91	8	1.47
Jun - 1st two weeks				
	4	2.46	6	3.03
Jun - 2nd two weeks				
	3	1.85	7	1.11
Jul - 1st two weeks				
	2	1.31	8	2.23
Jul - 2nd two weeks				

Price changes can be predicted from historical data

Seasonal Price Trends

reported by Extension



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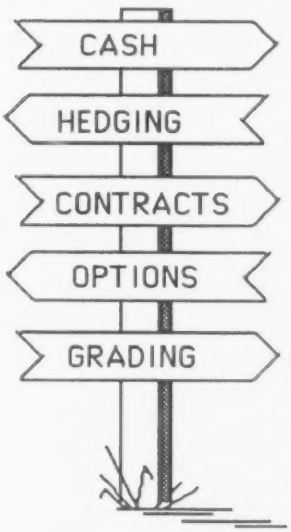
Apr - 1st two weeks				
	6	2.62	4	1.28
Apr - 2nd two weeks				
	6	1.41	4	1.10
May - 1st two weeks				

Notice the <u>probability</u> of prices rising during this season

Notice the <u>possibility</u> of prices decreasing during this season



A number of marketing tools are available to livestock producers.

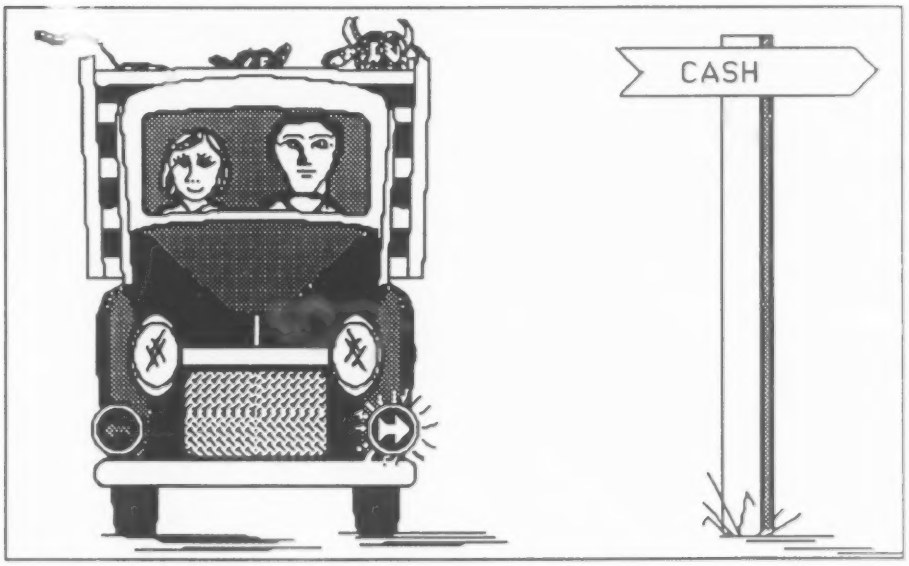
What tools do you use?

What tools do you avoid?

What keeps you from using some tools?

Neal and Andrea

- Small livestock farm
- Sell cattle once a year
- Good records of carcass grade and yield
- Not concerned with contracts, futures or options



CASH SALES

live weight mixed marketing
+ no sorting
- quality animals underpriced

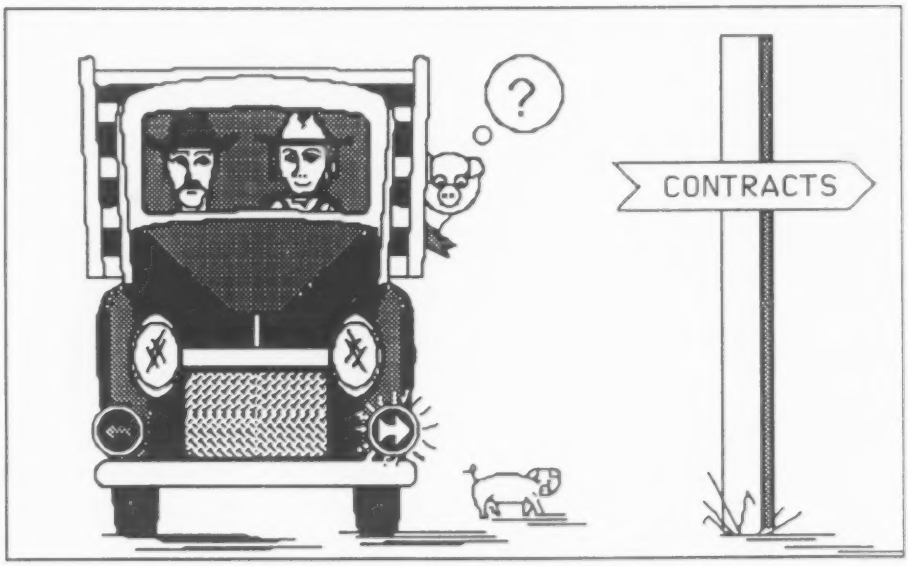
live weight selected marketing
+ price reflects quality
- labor and skill in sorting

carcass grade and yield
+ price determined by carcass value
+ detailed report on cattle grade
- inconsistency between packers
- delayed payment
- discounts possible

carcass weight (hot carcass) for cattle
+ priced on carcass
- difficulty monitoring weights

George and Jeannie

- Confinement hog unit
- Sell 100 pigs four times a year
- Good records of production costs
- Want to lock in a price



Forward Contracts

Some pluses

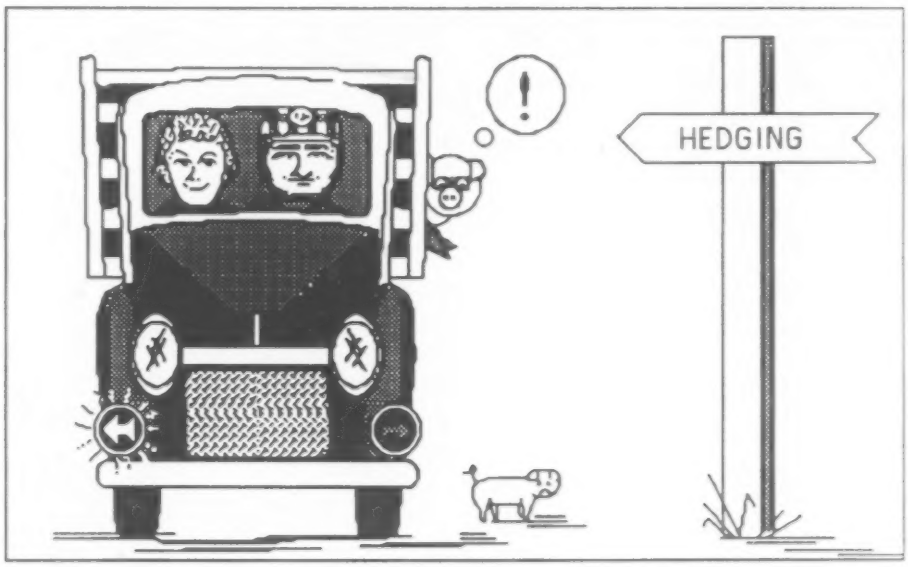
+ offers specific contract price
+ no margin deposit
+ negotiate and deliver locally
+ potential premium
+ variation in contract size

Some minuses

- difficult to cancel contract
- contracts vary with each firm
- discounts possible
- reduce cash market flexibility
- delivery required
- delivery period may be restricted
- forward contracts not always available

Chester and Susan

- 200 feeder pigs
- Price is above cost of production
- Believe prices will go down
- Fear difficulty in fulfilling a forward contract
- Would like to secure price



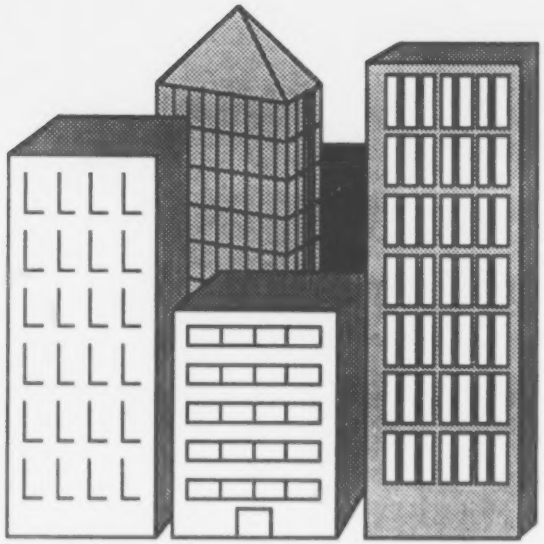
Making a Short Hedge

Cash Market	**Produce hogs**
Futures Market	**Sell a hog futures contract**

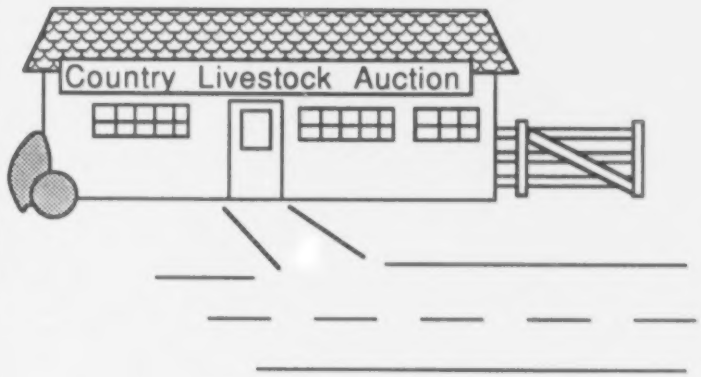
Lifting a Short Hedge*

Cash Market	**Sell cash hogs**
Futures Market	**Buy hog futures contract**

* An alternate method of lifting a short hedge is to deliver the hogs to fill the futures contract.



Chicago Futures
Contract = $74.50 per cwt.



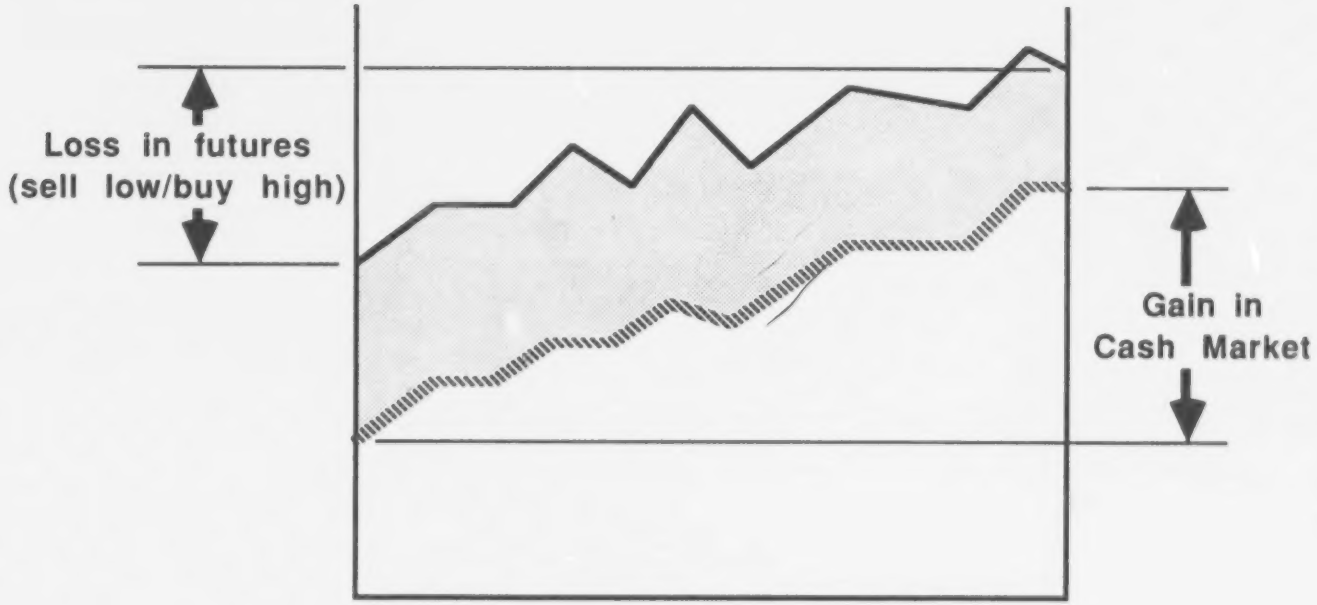
Local Cash
Price = $73.00 per cwt.

Basis is the difference between the local cash price and a futures contract price

$74.50 - $73.00 = $1.50 basis

Farm and Family Management

Hedging reduces the producer's risk of a price change.

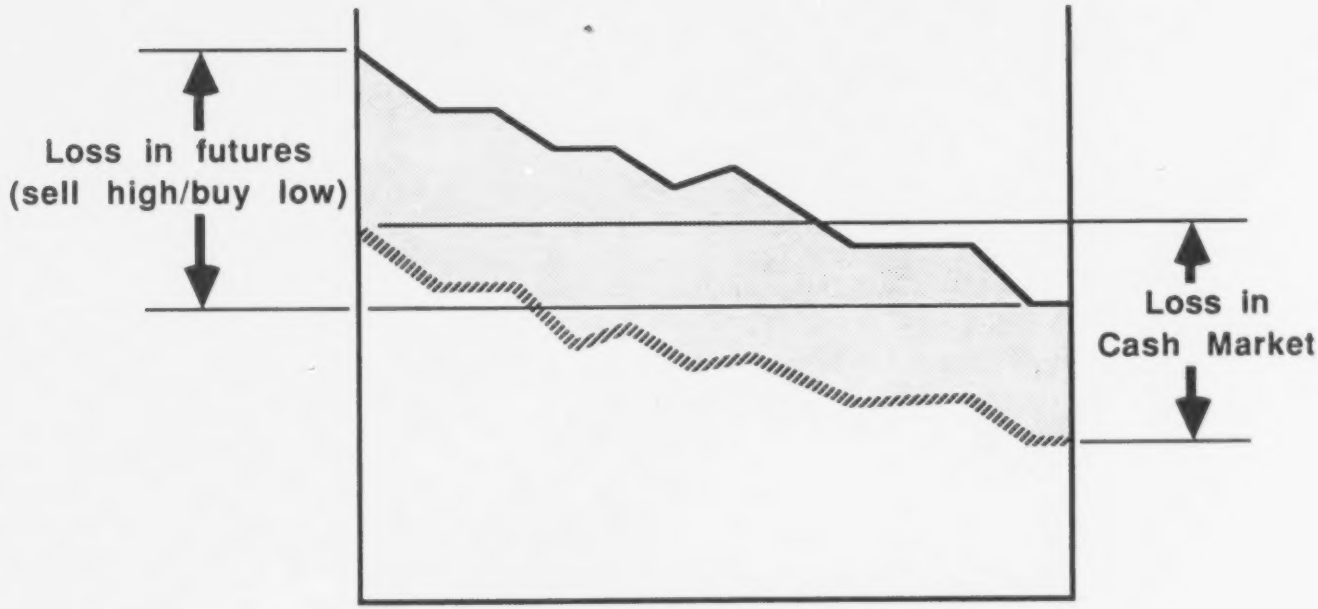


When prices increase, losses in futures are offset by gains in the cash market.

Farm and Family Management

TM 11-19

Hedging reduces the producer's risk of a price change.



When prices decrease, losses in cash market are offset by gains in the futures market.

Return on Hedge

Profit/loss on futures	
Sold futures at	$48.00
Bought futures back at	-43.00
Profit or loss	$+5.00
Total return	
Cash price	$40.00
Profit on futures	+5.00
Total gross return	$45.00
Net return	
Total gross return	$45.00
Minus cost of production	-39.00
Minus brokerage fees	-0.20
Minus interest on margin	-0.15
Equals actual hedge return	$ 5.65

Return on Hedge

Profit/loss on futures

Sold futures at _____

Bought futures back at _____

Profit or loss _____

Total return

Cash price _____

Profit on futures _____

Total gross return _____

Net return

Total gross return _____

Minus cost of production _____

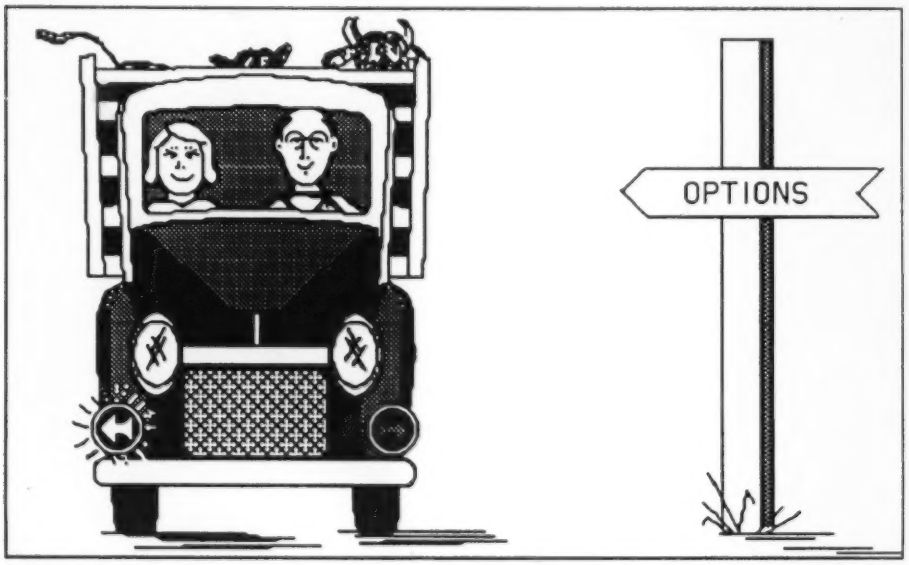
Minus brokerage fees _____

Minus interest on margin _____

Equals actual hedge return _____

Bryan and Brenda

- Cattle feedlot
- Sell 1000 head each year
- Keep accurate records of production costs
- Prefer price insurance of $70.00 per cwt.
- Want to take advantage of price increases



What is an Option?

An Option is a Choice

It is an agreement to make a choice
to buy or to sell a commodity

Why Use Options?

Use options for price protection
and
profit opportunities.

What	☞ Option on Property
Who	☞ You pay your neighbor
How much	☞ $3000 for the
To do	☞ Right to buy
For what	☞ 120 acres at
Price	☞ $1200/A
When	☞ During next 6 months.

What	☞ Option on Stock
Who	☞ You pay your _____
How much	☞ $_____ for the
To do	☞ Right to buy
For what	☞ ATT stocks at
Price	☞ $_____
When	☞ During next ___ ___.

What	☞ Option on Futures Contract
Who	☞ You pay your broker
How much	☞ $_____ for the
To do	☞ Right to sell
For what	☞ Live cattle futures contract at
Price	☞ $_____
When	☞ during next ___ ___.

Element of an Option

To Do:	1. Type of action Put (right to sell) or Call (right to purchase)
For What:	2. Underlying Commodity Property, stock, futures contracts.
At what price:	3. Strike price or exercise price The price at which a) buyer of a call has the right to purchase a futures contract b) buyer of a put has the right to sell a futures contract
When:	4. Expiration Date The last day the option can be exercised.
How much:	5. Premium Price of the option.

Elements of Futures Options

1. **Action** ☞ *To have the right to buy*

2. **Commodity** ☞ *Futures contract on cattle*

3. **Strike, Exercise Price** ☞ *At a strike price of $76*

4. **Expiration** ☞ *Before March contract expires*

5. **Premium** ☞ *For $1.55 premium*

WHO DETERMINES?

1. **Premium** = Negotiated by open outcry on trading floor.
2. **Action** = Puts and calls defined by the Exchange.
3. **Commodity** = Exchange determines commodities it will trade.
4. **Expiration** = Expiration date for each commodity set by the exchange.

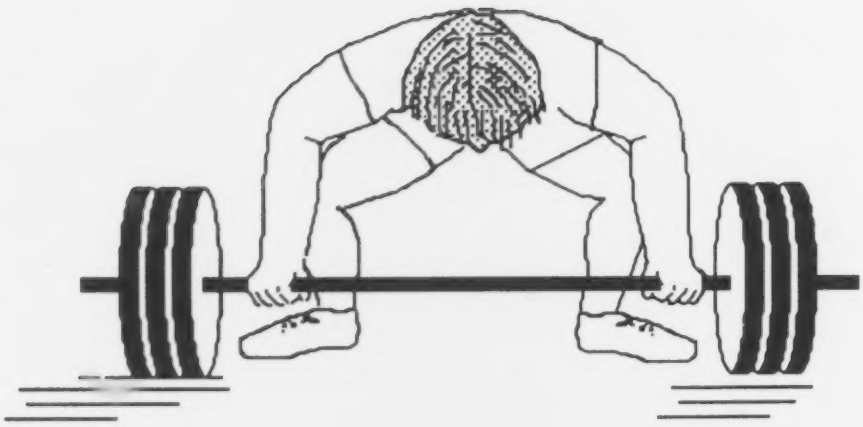
How are Premiums Determined?

Option premium = **Option's intrinsic value plus its time value**

Intrinsic Value = **The dollar value that would be realized if the option were to be exercised immediately.**

When puts and calls are "in-the-money"

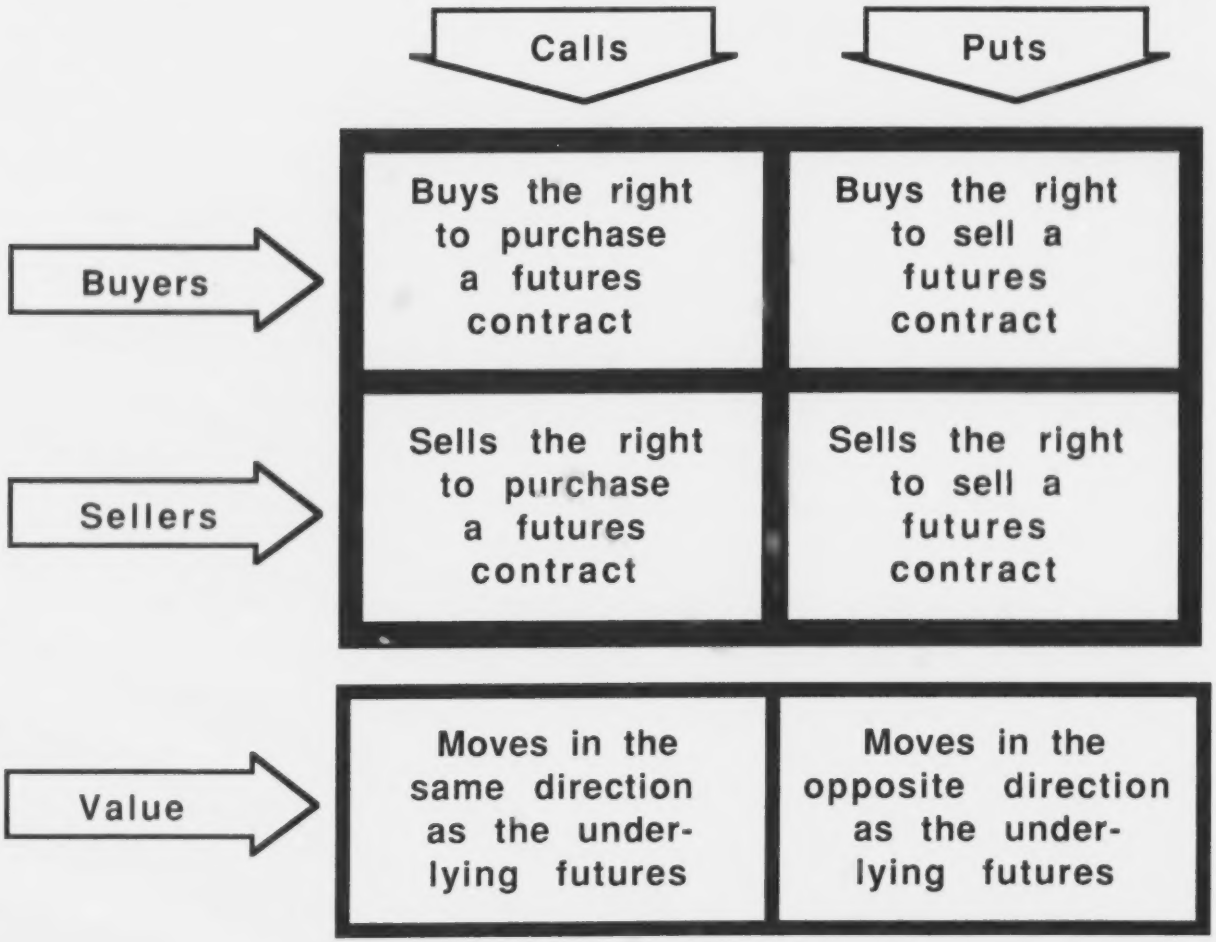
Time Value = **The amount of money that buyers are willing to pay in hope that the option will be worth exercising at its expiration date.**



The owner of an option has the power to EXERCISE the choice of that option

The seller of an option is paid a premium to assume the risk of price changes. The buyer of an option owns the right to exercise that option.

Types of action in the options market


Calls
Puts
Buyers
Buys the right to purchase a futures contract
Buys the right to sell a futures contract
Sellers
Sells the right to purchase a futures contract
Sells the right to sell a futures contract
Value
Moves in the same direction as the under-lying futures
Moves in the opposite direction as the under-lying futures

Farm and Family Management

SOME OPTION STRATEGIES

1. Place a floor on price...
   ...buy a put

2. Place a ceiling on price...
   ...buy a call

3. Establish a floating price floor...
   ...buy/sell puts, buy higher price puts

4. Hedge a hedge...
   ...sell futures, buy calls

5. Fence a price...
   ...buy a put, sell a call

Option Strategy... Placing a Floor on Price

a. Buy a $52 August Hog PUT @ $1.25/cwt.
b. Set a floor price

strike price	$52.00
premium	1.25
basis	1.27
costs	.30
floor price	$49.18

c. If prices drop below $52.00 and you expect cash market to be less than $49.18,
   exercise the option to sell the contract
   or
   resell the option at a higher price

d. If price rises
   let the option expire and gain on cash market

e. Your cost:

premium	$ 1.25
times weight of a contract	x 300 cwt.
equals your cost	$375.00

Option Strategy... Place a Ceiling on Price

a. Buy a March $76 feeder cattle CALL @ $1.55/cwt.

Call option	$76.00
Premium	1.55
Basis	- 1.20
Costs	.25
	76.60

b. If cash price rises the value of the CALL will also rise:

Exercise the option or
Re-sell at a higher premium

c. If price drops

Let the option expire,
*Lose $682 in premium (1.55 x 440 *cwt),*
Lose $110 commission cost (.25 x 440),
Make a gain on the cash market.

* Feeder Cattle Contract=44,000 pounds

Time to review options.....

1. What is the connection between live hog options and the live hog futures market?

2. What is a "PUT" option on live cattle?

3. What is a "CALL" option on feeder cattle?

4. Explain "strike price" and "premium."

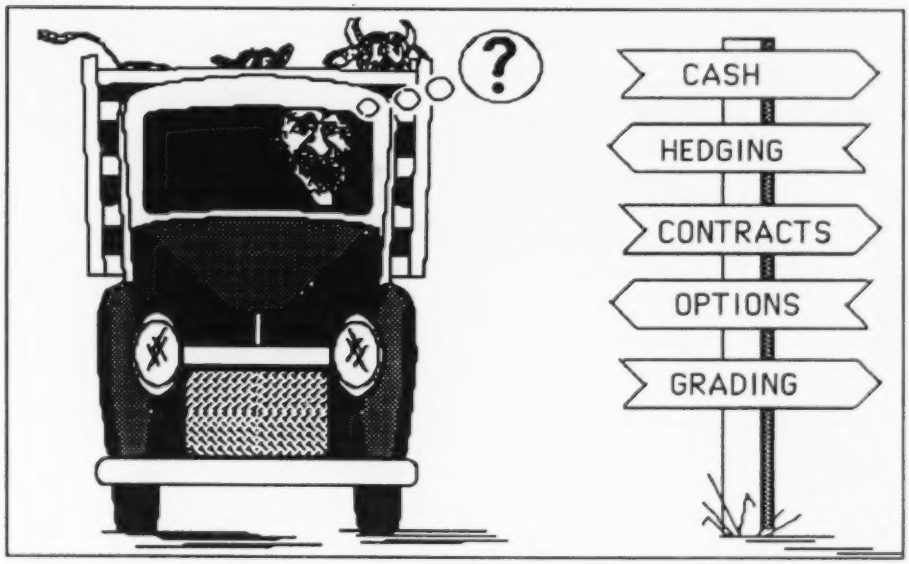
5. How do you figure the floor price set by buying a put?

6. In what way do options offer price protection and profit opportunities?

7. Which options strategies are most likely to be useful to you as a producer?

8. What prevents you from using options in your marketing program?

Summary



- ✓ Seasonal and cyclical production and prices affect marketing.
- ✓ Cash sales, forward contracting, hedging, and options offer different marketing opportunities.
- ✓ Profit potential and risk protection influence your own pricing decisions.